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ADDRESSES.

FIRST PAN-AMERICAN MEDICAL CONGRESS.

AN ADDRESS DELIVERED BY THE PRESIDENT OF THE CONGRESS.

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In the City of Washington, D. C., September 6, 1893.

Gentlemen of the First Pan-American Medical Congress:—This occasion is an unique one, and the thoughts which force themselves on the minds of all of us are, I am convinced, so similar that the briefest greeting might well seem the most fitting address. But when I reflect that I stand here to represent the original committee appointed in pursuance of the resolution which was adopted unanimously on May 5, 1891, at the meeting of the American Medical Association, and that this resolution extended a cordial invitation to the medical profession of the Western Hemisphere to assemble here in a Congress, I realize the unusual dignity of the duty I must discharge. If anything could add to the dignity of this assemblage, which for the first time asserts formally the organic union of the physicians of all America, it is the fact that the Congress of the United States, impressed with the importance of our proposed meeting, passed a joint resolution (July 18, 1892), requesting the President to extend those invitations in response to which we welcome the presence here of official delegates from all the governments of the Western Hemisphere. In like manner are the several States of our own Union, the principal municipalities, and many of the leading educational institutions, both of North and South America, represented officially. You will not, then, think it strange that, called upon to address such an assemblage in this Columbian year, it should seem less fitting to dwell upon any technical topic than to turn our thoughts to the state of this continent and of its aboriginal inhabitants at the time of its discovery by Columbus, and to the obstacles which opposed him and the great men who completed his work. For these have had a bearing on the racial developments which have since occurred here, and should be held in mind in any estimate of the progress we have made during the subsequent four centuries. The state of medical science in Europe at the time of the discovery, and the spirit which has controlled its subsequent course, are fitly to be studied in connection with what we have accomplished during the same period and with the opportunities which present themselves to us at this time.

GENERAL RECOGNITION OF THE IMPORTANCE OF THE MEETING.

The recognition of the appropriateness and importance of this great meeting has been immediate and universal. International although it is, the basis of its organization and the special features which mark it, remove all possible suspicion of an imitation of, or of interference with, the great International Congress whose successive meetings form a crescendo scale of scientific and administrative triumphs which the medical profession of the world regard with justifiable pride.

Our executive committee, and our efficient general secretary to whose unselfish energy and masterly powers of organization we owe a great debt of gratitude, studiously avoided the possibility of any such interference, by delaying the selection of a date for our meeting until that of the Congress at Rome was announced, and by then adopting a date which not only permitted but encouraged the presence later at Rome of those who should gather here. I can only add my deep regrets that the unhappy reappearance of cholera in Southern Europe—striking example as it is of the urgent importance of the very work which calls us together—has necessitated a postponement until next spring; a postponement which, however, there is no reason to fear will lessen the complete success of the meeting on its newly-announced date. The International Medical Congress is, indeed, a splendid demonstration of the solidarity of the profession and of the world-wide scope of the objects we pursue.

This Congress represents much more, however, than our common interest in medical science and the common feeling of brotherhood which animates the entire profession. It is, indeed, it always has been, and forever may it so continue, the glory of the medical profession that their allegiance is one and undivided, for their service is solely in the cause of truth and humanity. Dynasties have risen and crumbled; the map of the world has been changed times almost without number, but the march of medical science through the ages has been ever onward and upward toward those lofty goals—the prevention of disease, the relief of suffering, the improvement of the race.

For us who meet here there is all of this glorious recollection and animating purpose, and there is much more to unite and to inspire us. We meet under the shadow of giant conceptions, as old as Aristotle, which agitated the minds of the great thinkers of antiquity, and were but slowly approaching a definite form when the sublime faith and genius of Columbus solved the problem of the globe.

It is true that this vast American continent, with its sixteen million five hundred thousand square miles of territory, already numbers one hundred and ten millions of inhabitants, embracing all types of human life, and many varieties of political organization. But all that has yet been accomplished is but the feeble beginning of the development which awaits us. When Canning secured the recognition of the republics of South America, he boasted that he had

called the New World into existence to redress the balance of the Old, and yet the luminous suggestions of Franklin, of Bolivar, and of Blaine as to the political and commercial relations of the countries of the western hemisphere are still only prophesies which must long await their fulfillment.

The destinies of nations are slowly evolved, and occurrences which fill the horizon of a generation appear to the broad gaze of history as mere features in the great panorama of the ages.

HISTORICAL REFLECTIONS.

Even a period of four hundred years is but a fraction of the history of Spain, of France, of England. Yet four hundred years ago this entire continent was not only undiscovered and unknown, but its very existence was unsuspected save in the ingenious speculation of philosophers. We recall the familiar but ever interesting lines of Seneca:

"Venient annis sæcula seris
Quibus Oceanus vincula rerum
Laxet, et ingens pateat tellus,
Tiphys que novos detegat orbes
Nec sit terris ultima Thule"—

and do not marvel that their strain of glowing conviction should have led Columbus to write them out twice over in his "Profecias." But all the same, this new world lay shrouded in the obscurity of the great Sea of Darkness, cut off, as we have since learned, from the known inhabited world, by changes wrought in remote geologic eras, and waiting the fullness of time which should lead the inspired genius of Christopher Columbus to seek the east by sailing west. We now know that in his quest of a western passage to Asia he reached the eastern shore of this continent on October 12, 1492, but even to the time of his death, on January 20, 1506, neither did Columbus nor any voyager or writer have any conception of the vastness and real significance of his discovery. All that the geographical knowledge of the day enabled them to grasp was the belief that Columbus had found a new route to the Indies by sailing west. Within a few years, however, the daring sailors of Spain and Portugal, of Italy and of England, pushed their voyages along the coasts. The astonishing discoveries of Americus Vespucius on his celebrated third voyage in 1501–02, when between Lisbon and the Island of South Georgia he traversed an arc of ninety-three degrees, led him to apply for the first time to this continent (it really was South America of which he spoke) the title of New World (Mundus Novus). It concerns us not to consider further how, by no intent or design of Vespucius, portions of South America at first, and later the entire continent, came after his death to be named after him. Yet when a few days ago I held in my hands the little quarto published in 1507, in which Professor Martin Waldseemüller, of the College of Saint Dié in Lorraine, first suggests the name America, in utter ignorance that the coast explored by Vespucius was continuous with or even related to the land discovered by Columbus, I could not help smiling sadly at the frantic and fruitless efforts we make to secure immortality by our petty observations, while here Fame, in strange whimsy, threw her laurels for the greatest discovery ever made around the head of one who neither had nor preferred a claim to it.

WHAT GEOLOGY AND PALEONTOLOGY HAVE TAUGHT.

Geology and paleontology have taught us that this so-called New World is in reality, in a scientific sense, better entitled to the name of the Old World. The oldest known strata have their widest development on its surface, and animals, such as the horse, which are said to have been introduced after 1492, are shown to have had their original habitat here, and to have migrated hence to Europe, so that Cortes and Pizarro only reintroduced them to their former home. It is more important to recall the fact that the entire stretch of North and South America was, at that date, 1492, peopled more or less thickly with the descendants of tribes who had resided here from very remote antiquity. A high authority assures us that the number of these aborigines was probably from twelve to fifteen millions, and in spite of considerable differences in physical appearance, as between the Iroquois of New York and the Aztecs of Mexico or the Incas of Peru, in dialect and habits, it is generally conceded that this vast aboriginal population, of North America and South America alike, with the exception of the Eskimos, belonged to one great race of Red Men.

Eskimos and Red Men alike seem to have migrated to our continent at one time, or more probably in successive waves, in the remote past, either when the northwest corner of America was joined to Siberia by the elevation of the area now known as Bering Sea, or when the lofty submarine ridge which now passes from France to Greenland was elevated so that it would be possible to travel on foot from Europe to America. If the attempt be made to decide at what period of geologic time such immigration occurred, and whether in one great migration, or, as seems most probable, in successive waves, problems of extreme if not insurmountable difficulty present themselves.

The aborigines who were living on this continent at the time of its discovery by Columbus presented, it is true, considerable differences in the stage of development they had reached, as well as in their language and even in their appearance. There are long intervals of social development evident between the squalid sty of the California savage, the log house of the Iroquois, and the great structure of the Zuni, of Tlascala, or of Uxmal. Yet in them all can be demonstrated an underlying principle of adaptation to a certain mode of communal life such as all American aborigines are believed to have practiced. All attempts to distinguish the existence of special races, as of the mound-builders, have broken down in the light of critical study, and the powerful arguments of philology confirm the results of zoölogical study as to the essential unity of the American red race. The tribes in different parts of this vast territory certainly presented marked differences in physical appearance, and our ethnological collections show that as regards size and weight of frame and shape of skull considerable variety existed among them. But all possessed the cinnamon-colored or copper-colored complexion, the high cheek bones and small, deep-set eyes, the straight black hair, with scanty or absent beard; and the conclusion of the most competent authorities is that no sufficient differences, physical, linguistic, or social, existed to invalidate the evidence in favor of the unity of the race.

Fortunately we are not called on to attempt to read the geological record. For our purpose it is indifferent whether all the relics of the ancient

Americans are of the neolithic type, or whether the apparently plausible claim be ultimately established that paleolithic remains are also found in various places. This at least we know, that the soil and climate had shown themselves favorable to the development of a population already numerous, vigorous, hardy and enduring, and brave and warlike, though often cruel, and evidently advancing in social development, though at very different rates at different localities. Ignorant as we are of their primitive origin, it is doubtful if the most earnest advocate of the monoganist view that all mankind was originally descended from one pair, will urge that our aborigines were descended from a single couple, or even from a few boat-loads of Asiatics accidentally carried to our Pacific coast or that we shall hear again the arguments drawn from the many striking resemblances between the myths, languages, customs or hand-wrought objects of the aboriginal Americans and of various Oriental nations. The surprise which, I am sure, all of us have experienced at these resemblances must be checked by these two thoughts so well expressed by Fiske and by Lubbock respectively, that one of the most important lessons impressed on us by a long study of comparative mythology is that human minds in different parts of the world, but under the influence of similar circumstances, develop similar ideas and clothe them in similar forms of expression; and again, that different races in similar stages of development often present more features of resemblance to one another than the same race does to itself in different stages of its history.

TREATMENT OF THE ABORIGINES.

An immense amount of sympathy has been expended upon the cruel treatment of the American aborigines by the European invaders. Of course, it was the sad old story, so often repeated, whenever a better armed and more highly civilized power has come into conflict with a primitive, ignorant, and ill-armed people. Over the ghastly picture of Indian slavery one would indeed wish to draw a veil, though its darkest shadows are relieved by the splendor of the character and labors of the illustrious Las Casas, and by the enlightened actions of those great men, Emperor Charles V, Pope Paul III, and Cardinal Ximenes. But it is a romantic extravagance to deplore the destruction of any system of government or society which existed in 1492 in any part of the continent. If the present state of the native Indian population in North and South America is far from satisfactory, and fails to fulfill the promise shown, especially in South America during the first century after the conquest, may this not fairly be attributed to unwise legislation by the ruling nations, to the absence of continued, effective religious instruction, and to the base cupidity which has led us to promote the fatal passion for stimulants, so common among barbarous people? There seems no sufficient evidence to make us lose hope that the remains of the aboriginal Americans may, under more wise and equitable treatment, gradually develop into useful citizens of our republics, and be capable of wholesome assimilation with the body of the population.

It is easy to assert and hard to disprove that the development of the red race on this continent was progressing slowly prior to 1492. As a matter of fact, we do not possess the data, either about their early history or about the primitive condition and rate of development of any of the more civilized races, to permit us to institute a comparison. Our earliest knowledge of the ancient Egyptians, for instance, reveals them living in a state of civilization already advanced at least a full ethnical period beyond that even of the Aztecs. How many centuries had elapsed while the successive stages of savagery and barbarism were passing in Egypt can never be even surmised. There seems no reason to doubt that, had America not yet been discovered, there would have been going on here for the last four hundred years a slow and irregular approach to a higher social condition. There certainly is no doubt that during and since the conquest many sad mistakes, and not a few atrocious crimes, have been perpetrated in the name of civilization and of liberty. But, on the whole, the student of history is forced to admit the enormous advantages which have resulted from the conquest, by Europeans of the fifteenth and sixteenth centuries, of tribes the most advanced of which were still in a very primitive state of civilization. I have ventured upon this rapid sketch of a familiar subject because it is well that we should be clear in our comprehension of the conditions which existed in America four hundred years ago, when the start was made to introduce the European races and civilizations.

TWO CENTURIES REQUIRED TO DEMONSTRATE THE MAGNITUDE OF THE DISCOVERY OF AMERICA.

We meet here to-day to represent what these have accomplished in their new environment during these four centuries in regard to certain highly important subjects. We cannot fail to be interested in considering what scientific acquisitions in these branches were actually brought here, what disadvantages were to be contended with, how far our progress may be regarded as satisfactory, what great questions there are which concern us all deeply, and in what lines of research and work we may unite for the common good, and for the greater advancement of science.

The words graven on the tomb of Ferdinand Columbus in the cathedral at Seville:[1] "To Castille and Leon, Columbus gave a New World," are indeed true, but they do not express the whole truth. John Fiske well says: "The discovery of America may be regarded in one sense as an unique event, but it must likewise be regarded as a long and multifarious process. The unique event was the crossing of the Sea of Darkness in 1492, and no ingenuity of argument can take from Columbus and from Spain the glory of an achievement which has, and can have, no parallel in the whole career of mankind. It established a true and permanent contact between the eastern and western halves of our planet, and brought together the two streams of human life that had flowed in separate channels ever since the glacial period." But to demonstrate the magnitude of this discovery, to determine the physical features of this Western Hemisphere, to plant firmly the seeds of European civilization, demanded the heroic exertions of two full centuries. Not Spain alone, but Portugal, Italy, France, England, Holland, Denmark, Russia, played their part, and the names of Cabral and Pinzon and Magellan, of Cortes, Balboa, and Pizarro, of Ponce de Leon and De Soto, of Champlain and LaSalle, of

[1] "A Castilla y á Leon Nuevo mundo dió Colon."

Drake, Hudson, Baffin, Davis and Bering, must remain associated forever with this stupendous and progressive work of discovery. Not until 1806 was the last step taken by Lewis and Clark, who then succeeded in crossing the continent of North America from east to west, and thus completed the task undertaken by Champlain in 1608. And if the mere study of the outlines and dimensions of America occupied two centuries, what are we to say of the far greater obstacles opposed to the colonization of the vast territory, and to the determination and establishment of suitable forms of government, and of harmonious relations between the numerous States and countries into which America soon came to be divided?

The older political systems of Europe seem to require still the assistance of considerable artificial support, and their occasional disturbances are of a decidedly unpleasant character. Is it strange that some of us still have our little unpleasantnesses at home or with our neighbors, which indicate that the education of our people is as yet wofully imperfect in those things that most nearly concern their welfare? Of this, at least, we may be sure, that all that promotes free intercourse among us helps on mightily the solution of these hard problems. It is a true saying that to know is to excuse, and, more than this, in regard to nations if not strictly in regard to individuals, it may be added that to know is to love. We turn with quickened interest to the sage advice of the illustrious Franklin, who, in 1749, embodied in his plan for the organization of the University of Pennsylvania an earnest advocacy of the thorough teaching of the Spanish and Portuguese tongues as likely to hasten the development of those close reciprocal relations which he foresaw would inevitably arise between the countries of the two Americas. The spirit of the age as it embodies itself in our educational systems and in our literature, the giant forces of steam and electricity, as they link together the most distant points of our territory, are working inevitably together for the enlightenment, the elevation, the better mutual understanding, and the more cordial relations of all of us.

The year whose four hundredth anniversary we now celebrate found the world stirred as never before. A work of tremendous importance for the future of the human race had been going on amid the gloom of what are often called the Dark Ages. The more closely this period of absorbing interest is studied the more do we appreciate the magnitude and the necessity of the changes effected during those centuries in preparation for the splendid activities of the Renaissance. The mission of the Middle Ages had been really, though not obviously, a cosmopolitan one, and it was fitting that the noblest achievement of the Renaissance should be the discovery of America. The barriers between nations had been lowered, and there had been going on the process of blending and interpenetration which was soon to be extended to this Western Hemisphere with such large results. The protest against mere dogma in religion and in philosophy; the revolt against usurped and abused absolutism; the demand for light and knowledge and the common rights of humanity, these awakened then to be stifled no more, but to swell forever in larger utterance until they shall, in some yet distant golden time, announce universal liberty under equitable laws and universal peace through arbitration. It is not for us to taunt the glowing expectations of the men of 1492 with their long-postponed fulfillment. It ill becomes us of to-day to speak in other than tones of humility when across the brightest spots of the vaunted civilization of the close of the nineteenth century after Christ there still fall so many dark shadows lingering from the deep medieval night.

How each generation turns aside with the restless impatience of children from the lessons of the past, and shuts its eyes to the truth which inexorable history calmly shows, that long periods of time are required for the accomplishment of each great advance in religious, or political, or social, or scientific truth.

Yet though we smile somewhat sadly as we read the bursts of enthusiasm so plentiful at that time, we dare not challenge the fitness of that grand name, the Renaissance, to the age which, through its mighty discoveries and the master minds who used them, diffused among the nations the new conceptions of the earth and the skies, of the church and the state. Only the pity of it that such long centuries of travail must ensue between this implanting of the seed of religious and political liberty and the mature growth for which we still wait.

THE DISCOVERY OF AMERICA, THE DIVIDING LINE BETWEEN THE MIDDLE AGES AND THE MODERN ERA.

In no respect may the discovery of America be regarded as the dividing line between the Middle Ages and the Modern Era more truly than in regard to medical science. In spite of the prodigious learning of the most distinguished Arabian and Jewish physicians, such as Avicenna, the Prince of Physicians, of Albucasis, of Avenzoar, the Wise and Illustrious, of Maimonides, their medical science was too largely speculative and philosophic. Great universities were established, some of which, as those of Bagdad and of Cordova, possessed regal revenues and magnificent libraries. Numerous hospitals were founded, of which the large and wealthy one established at Cairo in 1283 merits special mention. But the outcome of this long dominion of the Arabs and the Moors, so far as concerns medical science, was merely a marked advance in chemistry and pharmacy, the introduction of many new remedies, and the advocacy of the union of the natural sciences with medicine. Their chemistry was tinctured strongly with alchemy, their clinical teaching was elementary, their diagnosis and treatment lacked the true Hippocratic force and directness.

The endless speculations and metaphysical discussions of the schools had shown that it was not that way true progress lay. Unaided observation had scarcely gone further in eighteen hundred years than the point to which the immortal Hippocrates had carried it. True medical science, which could not progress without precise methods and instruments of precision, was forced to wait until from very different quarters came the development of the natural sciences and the era of exact experimentations which alone rendered them possible. Harvey's immortal discovery of the circulation of the blood was not announced until 1616, and his almost equally important and epoch-making discovery of the origin of the higher animals from the egg was published in 1651; yet it may be safely asserted that the work of this modest and truly scientific Englishman did more to advance medicine than all the labors of all

the schools from the days of Hippocrates. Not only were the facts demonstrated of infinite importance, but his method of patient, exact observation and experimentation until the truth was developed by cautious induction marks the introduction of a new era, and stamps Harvey as the father of modern medicine.

Galileo first indicated the use of the thermometer in medicine about 1595. Sagredo, of Venice, improved it in 1613, and Sanctorius, in 1625, urged its importance in the study of disease forcibly, but as yet ineffectually. Just as the astronomer, Galileo, gave us the first rude thermometer, Kepler, another illustrious astronomer, gave, in 1604, the first record of an accurate count of the human pulse. But so slowly did the importance of this datum in the study of disease impress the medical profession that the acute Sydenham, who lived until 1689, nowhere mentions a single pulse count. It is hard to find anything which illustrates better the radical difference between the spirit of medieval and of modern medicine than the vast mass of obsolete literature upon the pulse, loaded with fanciful speculation and super-refined subtleties of description, and yet wholly deficient in the only features which would give practical value to the study. What progress in exact medicine could be made without chemistry? Yet scarce any development in this branch occurred between the eighth and seventeenth centuries. And it was Boyle, the father of modern chemistry (not born until 1627—died 1691), who first succeeded in freeing from the trammels of alchemy this noble science. Not until the end of the seventeenth century did the value of quantitative analysis begin to be appreciated. Lastly, it was not until 1590 that we hear of the first compound microscope in the hands of Jansen.

Meanwhile the gross superstitions, combined with a blind dependence on the great authorities of antiquity, and especially on Aristotle and Galen, which had so long dominated medical science, yielded slowly to the growing light of positive knowledge. Fine-spun subtleties, drawn from metaphysical speculation; the fantastic notions of alchemy and astrology; the rank growth of impostures which flourished in the soil of ignorance, and the bigotry which placed every organ under the charge of a special saint and conjoined with every remedy a special form of supplication, still marked medical teaching and medical practice. But the bold, fearless, investigating spirit of the sixteenth century did its work for medicine as it did for other great matters. Vesalius (1514–1564) and his contemporaries created accurate anatomy. Paré (1509–1590) stamped imperishably on surgery the influence of his genius and lofty character. Paracelsus (1493–1541) hurled the shafts of ridicule and invective against the groveling subserviency to ancient authority, and did a rough but important stroke of work toward the emancipation of the medical mind. The grand old Hippocratic method of careful observation and cautious reasoning was reasserted, the unproductive philosophy of Galen and his Arabian worshipers was discarded, and at last there began to emerge from the darkness of so many centuries modern medicine, the medicine of loyalty to Nature and revolt against mere human authority; of reverent skepticism and reasonable faith; the medicine of scientific experimentation and of humane vivisection, that insisted upon knowing the causes of disease and that looked to hygiene as its noblest expression.

The history of European medicine for more than three hundred years is a record of which we may well be proud, when the enormous obstacles to progress are held in view. It is not necessary to remind this audience of a single one of its great triumphs. Vesalius and Paré, Harvey and Sydenham, connect themselves with Bichat and Laennec, and Hunter and Jenner, and Pasteur and Lister, and Virchow and Koch, and the torch of genius is passed down the line of these immortals and lights up the ages with the splendor of their achievements. But it is sad to reflect upon what has been done as contrasted with what might have been. The dense ignorance of rulers and masses on scientific questions, the slow progress of sound, useful education among the people, the huge claims of imperialism and of militarism, the wanton waste of luxury, have retarded research, have left but paltry sums available for the diffusion of knowledge, have hindered the embodiment in legislation and in actuality of much that would help the healing of the nations. It is an odd commentary on the vaunted civilization of to-day to contrast the sums doled out by the most enlightened governments of Europe for the promotion of higher education and original research, or for the suppression of preventable diseases, with those lavished on the vast hosts of armed men and the huge fleets of unwieldy armored ships deemed necessary for the maintenance of peace and order.

THE DOCTRINES OF DARWIN.

Within our own day we have seen the announcement of the grandest generalization reached by the human mind, in this century at least, and advanced in the most philosophic and inoffensive manner, received with a burst of intellectual skepticism and of religious intolerance, which showed that the old forces against which the Renaissance protested, and still protests, are yet alive, though happily shorn of most of their power. The marvelously rapid spread of the illuminating doctrines of Darwin, and their incorporation in the thought and speech of the world, and in the teachings of the churches, may indeed be pointed to as the crowning intellectual achievement of the nineteenth century.

PROGRESS OF MEDICAL EDUCATION IN AMERICA.

If the actual progress of medical science was slow in Europe during the years which followed that *annus mirabilis*, 1492, surely no word of reproach may be uttered against the early settlers in North and South America, because, amidst their heroic efforts to conquer this vast continent, it was long before they found time or energy to devote to the cultivation of that practical and essential subject of medical science. It is true that in 1551 Charles V founded the University of Lima, in Peru, and in 1553 the University of Mexico. Yet it does not appear that medicine was taught at these universities until a little prior to 1700.

In North America, although Harvard College was founded in 1636, the title of university was first applied to the University of Pennsylvania, which in 1765 established the first school of medicine in the United States. The scattered handfuls of early settlers on our shores had, indeed, problems facing them more urgent than the promotion of science.

They differed as widely in their motives for undertaking the appalling task of conquering and colonizing America, and in their fitness for the work, as they did in their nationalities. Separated widely from the mother countries, hampered very often by unwise and vexatious interference from the home governments, they waged war against the powerful tribes of aborigines who swarmed over the country, and against the no less serious obstacles of untried climatic and political conditions. Bloody warfare raged promiscuously and disease was rife. We have seen that the work of mere preliminary exploration occupied two centuries. The close of the third century found the early struggles approaching a succesful ending, only to be followed by violent political changes, not accomplished save by long and costly wars. The English conquest of Canada in 1759–60, the achievement of independence by the United States in 1783, the establishment of the independence of the South American republics in 1810 and the ensuing twenty years—these are the events from which the future historian will date the Renaissance or the Decadence in America, and to which reference will always be made in estimating our capacity for progress in politics, in literature, in art and in science.

For a long time it seemed even to friendly critics that the new races which strove for a foothold on American soil were unlikely to thrive as vigorously as in their accustomed habitats, and the impossibility of developing a genuine and lasting American type was freely asserted. To those of us who have considered this point with anxious care the last two decades have brought results that put to rest all apprehension. Whatever may be the future changes in the political organization or relations of the countries composing America, it is a demonstrated fact that the European race in America, which already numbers over one hundred millions, will show no decline in vigor or in energy, in physical or in mental strength. It is not on account of mere bigness in material achievement that we point to the millions who fought in the great civil war; or to the one hundred and seventy thousand miles of railroad in the United States—almost as much as in all the world besides—and the $10,000,000,000 of capital invested, and the army of nine hundred thousand employes; or to that tremendous structure, the Canadian Pacific railroad; or to the plans now under consideration for developing a continuous railway system for the entire continent, from Montreal or Puget's sound to Buenos Ayres. It is, even more, as evidences of large imagination, of courageous resolution and dauntless tenacity of purpose, and of enormous power of physical endurance that we value the enterprises which have subjugated this continent so swiftly and are hastening its commercial consolidation. We may be assured that countries which have shown such sturdy love of independence and resistance to outside interference, which have displayed so much sagacity in adapting their political constitutions to their peculiar conditions, which liberate and enfranchise all who dwell within their limits and afford to all an equal chance of advancement, will work out their destinies to far larger and wiser plans of friendly coöperation than we can now foresee.

Turgot, in his memorable address in the Sorbonne, well declared: "Tous les ages sont enchainés par une suite de causes et d'effets qui lient l'état du monde à tous ceux que l'ont précédé." The discovery of America depended on the operation of causes which can be traced back many centuries. The present condition of our continent, four hundred years later, is the result of the action and reaction of mighty movements which involve every country of the world. Here is the new and probably the last great place of gathering and intermixture of all nations. Here, as nowhere else are to be studied with all the aids of exact science the problems of ethnology and sociology. Here are to be worked out to the best advantage the problems concerning the relations of man to his physical environment; and the demonstration that in spite of the apparent magnitude of the powers of nature, and in spite of the admitted influence of climate and physical condition upon the progress of civilization, the powers of man for intellectual and social advancement are incalculably superior.

In all of this work a large share must devolve upon medical men, and fortunately our position in America is one which will enable us to work together with good effect. The high average intelligence of our people will make them prompt to appreciate results of solid utility or scientific value. The enormous wealth, present and prospective, of this continent should readily be diverted more and more bountifully to the promotion of learning and research —if, as may be trusted, we shall strive more and more after peace among ourselves and abroad.

We shall never cease to be proud of our lineage, or to acknowledge the immense debt we owe to Europe. Its languages are ours; its glorious past is part of our heritage; its mighty names in art and philosophy and science are household words with us; its rapidly advancing civilization incites us to loftier efforts. But the balance between the Old and the New Worlds is being redressed.

All know how the examples of our young and vigorous communities have supplied and fed the infectious principles of political liberty and of social equality. In every struggle for the rights of man, from the terrible but beneficent drama of the French revolution down to the present hour, our example and our assistance have been invoked.

SERVICES RENDERED BY AMERICA TO MEDICAL SCIENCE.

I cannot detain you by an enumeration of the services already rendered by America to medical science. Almost immediately after the discovery, important contributions to pharmacology were announced, chiefly from South America, and from the introduction of guaiacum in 1508, until now, these contributions have become more and more frequent. The entire medical world was agitated during the latter half of the seventeenth century by the struggle over the merits of cinchona bark, introduced into Europe in 1640, by Juan del Vego, and no more convincing tribute can be adduced as to the value of medical and sanitary science than the prominent place occupied by malarial diseases in the general and medical literature of the seventeenth and eighteenth centuries as contrasted with the feeling of impunity with which they are now regarded. Among the results which may be anticipated from this meeting is, I trust, the adoption of some well-considered plan for systematic conjoint study of our American remedies and their pharmaceutical preparations, looking to their scientific classification, to

greater uniformity in their preparation, and ultimately to a single pharmacopeia for the entire continent.

The introduction of nitrous oxide (1844) and of ether (1846) into medical practice, with which the names of Wells and of Morton are so honorably connected; the establishment of the operation of ovariotomy by McDowell of Kentucky, upon a secure scientific basis—these and hundreds of other achievements of lesser brilliance are too familiar to need mention. Every one knows now how superfluous it is to say a word in defense of American literature, and certainly we who know how powerfully the opinions and practice of medical men in Europe and throughout the world are influenced by American writings may view our position with some complacency. Yet a survey of what America is actually contributing to medical literature shows clearly how far we are behind the nations which lead in medical thought. In the year 1879 Rupprecht's Bibliotheca gave as the total number of new medical books, excluding pamphlets, periodicals and transactions, 419, divided as follows, viz.: France, 187; Germany, 110; England, 43; Italy, 32; United States, 21; all others, 26; and for 1891 I find the same Bibliotheca gives the total number as 1,063, divided as follows, viz.: Germany, 360; France, 243; Great Britain, 141; United States, 80; Italy, 78; Austro-Hungary, 70; Spain, 24; other countries (chiefly Switzerland and Denmark), 67.

On the other hand, in the more ephemeral forms of medical literature the figures are very different. I have had a careful count made of the volumes of medical journals and transactions filed in the library of the Army Medical Museum at Washington with their respective places of publication, and from this it is clear that of these classes of medical literature there were in 1890 and in 1891 published in America (including Canada, the United States and Latin-America) about twice as many volumes as in Germany or France, and fully three times as many as in Great Britain.

Of course we must not forget the fact that in the hurry of our life of to-day many observations and investigations of great value are published in journals, instead of being reserved to become part of more serious and complete volumes. But it will not be doubted, I think, that the great excess of medical journals in America, as contrasted with the comparatively small number of new medical works, is entirely consistent with the admitted leadership of Germany, France, and Great Britain in medical science. The fact that during the past twelve years Germany has risen from a place in this list second to France, 110 as against 187 in 1879, to the first place at present, with 360 new medical works in 1891 as against 243 published in France, speaks eloquently of the strenuous effort with which newly-united Germany is straining forward in science as in other fields. The truth is that the apparently extraordinary number of medical journals in America is due chiefly to a substantial reason, and one which influences equally the existence of very numerous medical schools and medical societies. The vast extent of territory, and the relatively sparse population render it impossible to serve the country with as low an average of medical men, schools, societies, or journals as is possible in more densely-populated countries. As to other and less satisfactory reasons which have operated, especially in the United States, to produce a great growth of ill-equipped medical schools and of poorly-supported new journals it is not necessary to speak here. Indeed, the rapid rise in the standard of scientific requirements, both of medical men and medical literature, and the increasing appreciation on all sides of the fact that the higher medical education is the true interest, both of the profession and of the public, is accomplishing the much-needed work of checking the ill-considered establishment of new medical enterprises, and of stimulating those in existence to more earnest life and more lofty aims.

So true is this in regard to our medical journals, that no one who has occasion to consult regularly the files of any number of them, can fail to be struck forcibly with the steady and decided improvement in the tone of their management and in the scientific quality of their contents.

This Congress meets at a period of peculiar and critical interest in medical education, and I am glad to say that for the first time in the medical history of the United States we may feel proud to have such a meeting convened here, and to invite a close examination of our educational standards and facilities. I should fail in courtesy and in candor alike, were I not to acknowledge the great value of the example which has been so consistently set by Latin-America and by Canada in the maintenance of a high standard of qualifications for medical practitioners.

Fifteen years ago the medical profession of the United States arraigned severely the management of their over-numerous medical schools.[2] While Canada then exacted a reasonably strict entrance examination and a course of medical study extending over four years, with one session of six months in each year, and while every country in Latin-America exacted a collegiate degree or a rigid entrance examination, and a course of medical study extending over six years, it was the general custom with the medical schools of the United States to grant a diploma conveying the full right to practice medicine to applicants who had been admitted without preliminary examination, and had attended without term examinations two courses of lectures covering about five months, and had passed a single and final examination conducted by their own teachers, whose emoluments were derived solely from the fees of such students. This discreditable prostitution of a great educational trust had been gradually brought about by large causes upon which I may not now comment. But it is with justifiable pride that we may point to the admirable and sweeping reforms that have since been instituted. It remains true that the laws of many of the States allow charters for medical schools to be secured without any guarantee of the standard of education that shall be maintained. But the awakened sentiment of the profession and of the community has, in a rapidly increasing number of the States, insisted that medical graduates before being admitted to practice shall pass a State examination conducted by an impartial board of examiners appointed by the governor. The medical schools, to their honor be it proclaimed, have, with few exceptions, been foremost in the struggle to secure this wise and beneficent legislation. They have done much more. In advance of these laws which will ensure a far higher standard of medical qualifica-

[2] Regular schools, 65; Homeopathic, 11; Eclectic, 4; total, 80, in 1877.

tions in the States fortunate enough to be so protected, the faculties of a number of the leading schools have forced their standard up at first to three years of obligatory study, and now to four years of eight months' study each, with a carefully graded curriculum and with strict examinations before entrance, at the close of each term, and finally before graduation.

When we recall that this has been done without the slightest governmental aid; and further that, owing to the prevalent view that medical schools have been sources of large profit to their faculties, the streams of private benefaction had not yet been directed in their favor, you will appreciate the high sense of duty and the devotion to science which have led these faculties to assume greatly increased labors with an expectation of considerably diminished remuneration owing to reduced attendance of students and to augmented expenditures.

The committee of arrangements of this Congress has wisely provided for a tour of inspection of some of these institutions. It is trusted that all of our foreign delegates, and as many as possible of the members of this Congress, will avail themselves of this opportunity to examine the equipment of some of our leading medical schools. They will be gratified to find in hospitals, in laboratories, and in libraries and museums alike, facilities which bear comparison with those of Europe. They will find an arrangement of studies and, above all, an organization for the conduct of daily, thorough bedside instruction in all branches of medicine, which leave little to be desired. It is easy to foresee, as another of the desirable results of such meetings as this held successively in various parts of America, such increased acquaintance with and confidence in our respective methods of medical education and medical treatment as will retain on our continent many of our students and many of our invalids who have been in the habit of going farther to fare no better.

A broad field opens before us for the study, with the aid of collective investigation, of the distribution and course of phthisis and rheumatism and other important diseases as influenced by race and locality. The endemic fevers, other than malarial and typhoid and yellow fevers, which are said to prevail in various parts of North and South America, have long demanded systematic investigation to complete the study which the illustrious Drake began. We shall now have the opportunity of studying, equally by means of collective investigation, the relative effects of various climates on the numerous races now represented in America, and of determining more accurately the scientific and practical questions connected with our extensive series of health resorts, which embrace the finest examples of every type. There are, indeed, none of the Sections provided for in this Congress from whose work more valuable results should follow than from those on medical pedagogies, on hygiene and climatology, and on quarantine. It was a sense of the urgent importance of these latter subjects, especially at the present time, and of the valuable results sure to follow their consideration by such a body as this, which led the government of the United States to extend the cordial invitation which has been uniformly accepted on the part of the Pan-American governments. I feel that by this action there has been secured for the subject of hygiene and State preventive medicine a formal recognition never before accorded on this continent, and one which must surely be followed by the willingness of the respective governments to use their influence to secure the enactment and efficient administration of proper legislation in accordance with the recommendations of this body of eminent experts.

PROFESSIONAL ORGANIZATION NECESSARY.

When the International Medical Congress met in Philadelphia in 1876, the address on hygiene and preventive medicine, delivered by the distinguished Bowditch, himself a pioneer in sanitary science, was one of the most impressive utterances on that important occasion. The review there given of the work of the previous century in this country in sanitary science was not flattering, but with the fine enthusiasm which marked that gifted man he predicted the immediate opening of the grandest epoch yet seen in the history of medicine. His closing appeal must be quoted: "Our PRESENT DUTY is organization, national, State, municipal and village. From the highest place in the national council down to the smallest village board of health we need organization. With these organizations we can study and often prevent disease." These stirring words were in accord with the spirit of the times and with the developments of science. When the brilliant discoveries of Koch brought to light the specific bacillus of tuberculosis and of cholera, and pointed out the scientific method to be pursued in similar investigations in the future, an unanswerable argument was provided against skepticism or indifferentism or official penuriousness. It required courage and showed rare breadth of view in Lord Palmerston to issue his celebrated reply to the presbytery of Edinburgh on the occasion of the threatened outbreak of cholera in 1853, in which he urged that the weal or woe of mankind so far depends upon the observance or neglect of the natural laws by which the affairs of the world are regulated, that if the local causes of disease were not removed before the return of the hot weather, the pestilence would be sure to return in spite of all the prayers and fastings of a united but inactive nation.

Much was accomplished, it is true, in preventive medicine between 1853 and 1876, when Bowditch spoke, but it is scarcely an exaggeration to say that the progress in the past twenty years has been greater than in the preceding twenty centuries. We have not, indeed, yet detected the specific poison of every infectious disease; even in regard to the familiar and much studied yellow fever, the latest publication of our distinguished Surgeon General, U. S. A., shows that this point is still unsettled. But the position of the whole matter is changed radically. Hypotheses have given way to facts. Every one now knows, or ought to know, that the most dreadful diseases are inseparably connected with definite organisms; that these organisms have special laws of development and distribution; that to destroy or exclude them is to avoid the disease, and that to tolerate conditions which favor their development is to encourage and invite the attack of the disease. When these simple, demonstrable propositions are considered in connection with such scourges as cholera and yellow fever, and typhus and typhoid fever, and scarlatina and diphtheria, and epidemic meningitis, it needs no further argument to prove the value and the necessity of quarantine, and of efficient medical inspec-

tion and protection. Nor does it need further argument to show the wisdom of establishing laboratories of hygiene at many points over the country, of equipping them amply with the ablest men and the finest apparatus, and of endowing them liberally, so that the search after the yet unknown causes of disease, and after the best methods to prevent the development of such causes as are known, may be prosecuted with ceaseless vigor.

It is easy now to get a hearing for these views, when public comfort is disturbed, the public purse threatened, and the public conscience awake and sensitive. At this moment our great commercial communities are reposing in confidence upon the sanitary measures adopted by our governments, in accordance with medical advice, for the restriction and exclusion of two dreaded pestilences, cholera and yellow fever. Recall with me the popular terror of last summer. Recall the hideous loss of life and the disastrous effects on commerce caused by former invasions of these diseases when the communities afflicted were smaller and less wealthy than are ours at present. We do not have to seek back to the Middle Ages for pictures of desolation wrought by infectious disease. Recall that tragic story of the great yellow fever epidemic in Philadelphia just one hundred years ago, as told by Rush. Try to estimate the result if cholera had effected a lodgment in New York city in July, 1892, and having found favoring local and climatic conditions, had, as on former occasions, spread its deadly germs to the north and south and west. The fair White City that was rising by that distant lake, under the magic wands of Art and Industry, would have been stricken with a fatal blow. No computation can well exceed the loss that would have fallen on this country. The entire people gazed with bated breath at the struggle waging in New York harbor, and universal thanksgiving arose when the dread invader was finally repulsed by the vigorous and sustained efforts of the sanitary authorities. That we, in America, are not to-day witnessing the aggravated recurrence of the epidemic, in accordance with unvarying precedent, can be due only to the continuance of these same efforts, reinforced with large authority, and aided by more efficient local sanitation. When this gratifying result is associated with the success which for some years has attended our efforts for the exclusion of yellow fever, no further argument can be needed to urge the adoption of such uniform measures as will for the future afford most sure protection against these diseases. These instances exhibit in the most striking manner the need and the value of the international sanitary agreements this Congress may do much to promote. But there will occur to all of us many other important questions to be solved only by earnest and united work. Nor can this work be accomplished until Bowditch's cry for organization is far more fully answered than it has yet been. Nothing but organization and coöperation, and, yet more, the establishment in the government of every civilized nation of a department of public health, will secure the continuous and forcible attention which the magnitude of this enterprise demands. There should be, and the day cannot be far distant when there shall be, in the cabinet of every government here represented, a secretary of public health, of rank, influence, and prerogative equal to that of any other cabinet officer.

Here, then, is the last and greatest service to be rendered to science and to the nation by our Congress. Our combined influence will be irresistible when used in advocacy of higher education; in carrying out large plans for the scientific study of our national life, as affected by social and climatic influences; in the adoption of remedies and remedial measures of demonstrated merit, and in the insistance upon a fuller recognition of the lofty function of preventive medicine. "Salus Sanitasque Reipublicæ, suprema lex." Let us acquire here a closer touch with each other, a deeper faith in our profession and its noble destiny, and a stronger determination to labor in brotherly coöperation for the loftiest ideals of service to science and the race.

ADDRESS TO MEMBERS OF THE PAN-AMERICAN MEDICAL CONGRESS.

BY BRIGADIER GENERAL GEORGE M. STERNBERG,
SURGEON GENERAL U. S. ARMY.
EXECUTIVE PRESIDENT OF THE SECTION ON MILITARY MEDICINE AND SURGERY.

Washington, D. C., Sept. 6th, 1893.

Gentlemen:—We are assembled for the purpose of discussing questions relating to military medicine and surgery; to consider what progress has been made in the treatment of camp diseases and of gunshot wounds as a result of recent discoveries relating to the etiology of infectious diseases and of traumatic infections; to profit by the experience of those who have had experience in the care of wounded men upon the field of battle and of the sick of armies engaged in actual warfare; to deliberate as to the best methods of transporting the wounded from the firing line and of rendering them the immediate assistance which may be required to save life; to compare the injuries inflicted by firearms now in use with those which came under our observation when a larger bullet with a much less initial velocity was the missile which caused a majority of the wounds we were called upon to treat.

All of these questions are interesting to us as military surgeons and of vast importance so far as the victims of future wars are concerned. It is true that peace prevails everywhere in the new world; that a most friendly feeling exists among the republics of North and South America; and that the modern way of settling disputes between nations is by arbitration rather than by a resort to arms. But so long as armies exist and deadly weapons are manufactured it will be the duty of the military surgeon to be prepared to render efficient aid to those who fall in battle, and to give the victims of those "camp diseases" which sap the strength of armies the benefit of the most efficacious treatment.

A still more important part of the duty of the medical officer in garrison or in the field consists in the sanitary supervision of the command with which he is serving; for, without doubt, most of the sickness which prevails among soldiers, and especially among new levies of troops, is due to insanitary conditions, and is preventable to a greater or less extent according to circumstances. But the subject of military hygiene does not properly come within the province of this Section, and we simply refer to its importance *en passant*.

We are, however, especially interested in the subject of the transportation of wounded men from the

field of battle. And in future wars we will have to meet new conditions, arising from the use of weapons having an extremely long range and from the nature of the wounds inflicted by bullets of small caliber projected with enormous velocity. Men will be disabled in great numbers within very brief periods of time, and of those struck by these missiles a large portion will require to be promptly removed from the field of action, for a smaller proportion will be killed outright.

Under these circumstances it is evident that our organization for the purpose of rendering first aid to the wounded and transporting them to the field hospitals must be carefully considered, and that the most efficient service will require a corps of assistants especially trained for this duty.

This matter has already received the careful attention of medical officers in the United States army, and we have now an organization designed to perform these duties, with the assistance of "company bearers" who also receive special training with reference to first aid, litter drill, etc. In time of peace our enlisted men of the "hospital corps" perform the duties of nurses, cooks and attendants in post hospitals, and they are regularly drilled in the most approved methods of handling wounded men and removing them from the field of battle.

A manual of drill for the hospital corps has been prepared by a board of medical officers and approved by the secretary of war. It will shortly be published "for the information and government of the army and for the observance of the militia of the United States." A demonstration of the litter and ambulance drills, as directed by this manual, will be made by Major Hoff of the medical department of the army, English speaking secretary of this Section, who was one of the medical officers to whom the duty of preparing the manual was intrusted. After this demonstration I hope we may have a free discussion of the merits of the system, as compared with the older, haphazard way of caring for wounded men which prevailed during our civil war. There are many present whose experience upon the field of battle will enable them to judge of the advantages which are likely to result from system and previous training in handling wounded men; and also as to the practicability of carrying out, upon the firing line, the methods which have been adopted.

The results obtained by our military surgeons during the late war are summarized in the accompanying table, which has been prepared, at my request, by Major Charles Smart, Surgeon U. S. A., from the data on file in the surgeon general's office. The table also shows the number of amputations and excisions made by medical officers of the army since the war and the percentage of mortality from the same. It will be seen that the mortality rate has been considerably reduced. This is no doubt partly due to improved methods of treatment, and especially to antiseptic surgery, although a considerable proportion of the operations made since the war were made before the general adoption of antiseptic methods, or under circumstances which did not admit of the strict application of these methods.

For the purpose of showing the enormous responsibility of the medical department of an army in time of war the following figures are given, showing the total number of cases treated in the armies of the United States during the late war, as given in the "Medical and Surgical History of the War of the Rebellion." The figures relate to white troops only, and are for the period from May 1, 1861 to June 30, 1866:

TABLE SHOWING THE NUMBER OF AMPUTATIONS AND EXCISIONS OF THE EXTREMITIES DURING THE WAR OF THE REBELLION AND THE PERIOD 1866-1891, WITH PERCENTAGES OF MORTALITY.

UPPER EXTREMITY.

	During the War.		Since the War.	
	Number of Cases.	Percentage of Mortality.	Number of Cases.	Percentage of Mortality.
Amputations:—				
Shoulder	852	28.5	7	14.3
Arm	5,456	23.6	62	19.4
Elbow	36	8.4	1	. . .
Forearm	1,747	13.9	57	8.8
Wrist	68	10.6	10	. . .
Fingers, with or without metacarpals	7,842	2.6	830	.1
Total	*16,001	. . .	967	. . .
Excisions:—				
Clavicle or scapula, partial	80	2.7	1	. . .
Shoulder	885	34.8	5	20.0
Humerus	696	28.5	11	. . .
Elbow	626	23.7	5	20.0
Bones of forearm	986	11.2	7	. . .
Wrist	96	15.6	1	. . .
In hand	116	8.6	22	4.5
Total	3,485	. . .	52	. . .

LOWER EXTREMITY.

	During the War.		Since the War.	
	Number of Cases.	Percentage of Mortality.	Number of Cases.	Percentage of Mortality.
Amputations:—				
Hip	66	83.3	4	75.0
Thigh	6,229	53.8	63	41.3
Knee	189	56.6	7	. . .
Leg	5,452	32.9	87	20.7
Ankle	161	25.1	21	9.5
Partial, of foot	1,518	5.7	182	. . .
Total	*13,615	. . .	364	. . .
Excisions:—				
Hip	66	88.6	6	33.3
Femur	175	69.4	3	33.3
Knee	57	81.4	. . .	. . .
Bones of leg	387	28.2	6	16.7
Ankle	33	29.0	3	. . .
Bones of foot	97	19.3	6	. . .
Total	815	. . .	24	. . .

*In addition to the amputations reported above as performed for gunshot fracture during the war, there were 583 amputations of parts of the lower extremity, with a mortality of 23.5 per cent., and 195 of the upper, with 10 per cent. mortality on account of extensive flesh wounds, in which the fatality was due mainly to shock.

The total number of cases recorded in reports of sick and wounded was 5,825,480, with a total mortality of 166,623. The total number of gunshot wounds was 230,018, with a mortality of 32,907. (The total number killed in battle was 42,724.) The total number of deaths from disease was 157,004, the principal causes of mortality being; typhoid fever 27,056+ typho-malarial fever 4,059=31,115; chronic diarrhœa, 27,558; inflammation of lungs, 14,738; consumption, 5,286; small-pox, 4,717; measles, 4,246; acute dysentery, 4,084; chronic dysentery, 3,229; remittent fever, 3,853. No doubt many of the deaths attributed to "remittent fevers" were in fact due to typhoid infection, which in this war, as in many of those which preceded it, proved to be nearly as fatal to the troops engaged as the bullets of the enemy.

No question is more important for the medical officer than that which relates to the prevention of typhoid fever and the various forms of intestinal

flux which in the past have caused such enormous losses to armies engaged in active field operations. No doubt a very large proportion of the sickness from these causes could be prevented by the simple prescription—boil all water used for drinking purposes which does not come from a source that is unquestionably pure.

But the question of the prevention of these camp diseases so destructive to armies, and especially to new levies of troops in warm climates, belongs to the Section on Military Hygiene, and I must restrict myself to topics which come strictly within the province of military medicine and surgery.

I therefore ask your attention for a short time to a subject which has been of great interest to military surgeons in the past but which, in the light of our present knowledge, should be interesting to us rather from an historical than from a therapeutic point of view. I refer to the question of traumatic infections. Hospital gangrene, erysipelas, septicemia and tetanus have no longer the terror for us that they had for our predecessors, for the etiology of these traumatic infectious diseases has been elucidated by researches made during the past fifteen years and, knowing the cause, the proper measures of prevention are apparent and are systematically applied whenever this is practicable.

That the infectious diseases mentioned result from the introduction into wounds of pathogenic bacteria is now definitely settled, and in the case of erysipelas and tetanus we know the specific characters of the parasitic invader which gives rise to these forms of wound infection. But no such demonstration has been made as regards hospital gangrene, probably because bacteriologists have had no opportunities for investigating this disease since the introduction of Koch's admirable methods of research. The writer, while in charge of the surgical wards of a large general hospital at Portsmouth Grove, R. I., in 1862, witnessed a typical epidemic of this disease which served as a lesson never to be forgotten. The two wards devoted to the treatment of surgical cases were filled with wounded men from the Army of the Potomac. A considerable proportion of the cases were simple flesh wounds, progressing favorably to a cure by granulation and cicatrization. Others were of a more serious character and were attended with profuse suppuration. The hospital was favorably located on Narragansett bay; supplies of all kinds were abundant; nurses were in sufficient number and attentive but the medical officer in charge was young and inexperienced. Under his direction the wounds were systematically cleansed and dressed with absorbent lint, etc. Nature seemed to be fully equal to the work of repair, except in those cases where a mistaken conservatism at the field hospital had left compound fractures to her unaided efforts. In such cases profuse suppuration, and septic toxemia sapped the strength of strong men. Possibly it was in such a case that the mischief commenced. Doubtless it was from one or more initial cases that the infection was carried by the sponges of willing but ignorant attendants to a considerable number of wounds which up to this time were progressing rapidly towards cicatrization. The result was a conflagration. Wounds previously healthy became inflamed, painful and angry looking, and within two or three days the cause of this change was apparent. The area of inflammation involving the previously healthy tissues rapidly extended and sloughs formed, sometimes as large as a man's hand and extending deeply among the muscles and along the planes of cellular tissue. Fortunately the infectious nature of the malady was quickly recognized and the measures adopted arrested its progress. It is hardly necessary to say that these measures included the removal of those not yet infected from the overcrowded surgical wards, a general cleaning up, whitewashing of walls, etc., and the necessary precautions relating to the conveyance of infection by sponges, etc. The treatment of the gangrenous wounds consisted in deep cauterization by means of nitric acid applied with a swab, the removal of necrosed tissue as soon as practicable, and the application of charcoal poultices. Goldsmith's bromin treatment had not yet been suggested. Under the treatment adopted the local extension of the disease was promptly arrested, and as soon as the sloughs had separated healthy granulations sprang up and in time repaired the mischief which had so quickly occurred.

This brief account of an epidemic of hospital gangrene witnessed by myself is intended to serve as an introduction to some remarks upon the history and etiology of this affection.

It is altogether probable that it was known to Celsus, who has described a condition of wounds not properly treated, which appears to be identical with the affection known to us as hospital gangrene. Ætius, who wrote in the fifth century, refers briefly to a similar affection. Some of the ancient authors appear to have described the form of wound infection under consideration by the name of "carbuncle." Rolandus, who wrote in the twelfth century, had a chapter in his third book on wounds, entitled "De Carbunculo supervenienti vulneri." Alphonsus Terrus, who, in 1534, published one of the first treatises upon gunshot wounds, was of the opinion that all wounds of this class were poisoned by the gunpowder. He gives an account of the results of such supposed poisoning which makes it appear probable that he encountered hospital gangrene. He recommended the actual cautery as a cure for this condition, and also as a preventive. Ambrose Paré combated the idea that gunshot wounds were poisoned by gunpowder or burned by the ball, and attributed the unhealthy condition into which such wounds were sometimes observed to fall, to a "corrupted state of the atmosphere." He remarks that, owing to this cause, "Nous en sommes devenus sages par l'expèrience de tant de plaies, lesquelles lors que je m éfforcais à les guérir, rendoient une telle et si grande puanteur, indice et temoinage tres certain de pourriture et infection, que les assistans ne la pouvoient sentir qú, a conter cœur, et avec bien grande difficulté."

Paré's treatment of hospital gangrene consisted in the application of an ointment containing pulverized alum, verdigris, and sulphate of copper. It does not appear to have been very successful, as he reports that in many of the wounded in the battle of St. Denis the wounds fell into putrefaction and were accompanied by putrid fever and other serious accidents, and nearly all the wounded died, although their wounds may have been slight and they were supplied with everything necessary for their proper sustenance and treatment. According to Paré the

wounds made by swords, pikes and lances became affected with gangrene (les pourritures) as well as those made by firearms.

LA MOTTE, who wrote his "Complete Treatise on Surgery" early in the seventeenth century, gives a very complete account of hospital gangrene. He says: "On prend ce mot" (gangrène), "properment pour un disposition a la mortification qui est ce qu'on appelle vulgairement *pourriture* a l'Hotel Dieu de Paris, laquelle survient et accompagne presque toutes les playes qui sont traités dans cet Hôpital, et la plus grande partie des absces que l'on y ouvre, a cause de l'air corrompu qui y regne et que ces blessez y respirent."

The practice of surgery in a hospital where the opening of an abscess was likely to be followed by rapidly spreading gangrene must have been rather discouraging, and so long as the idea prevailed that this resulted from "a corrupted condition of the air," rather than from direct infection conveyed from wound to wound by instruments, sponges, etc., there was little chance of eradicating the evil.

Ponteau, who wrote in 1783, referring to the prevalence of gangrene in French hospitals, raises the question whether such institutions are not, on the whole, more pernicious than useful to mankind. What would these surgeons of two hundred years ago have thought of our laparotomies for removal of the appendix, etc.; of our operations upon the principal joints; and of the absence of "surgical fever" after serious operations made antiseptically or with aseptic precautions?

Mr. John Bell, in his "Principles of Surgery" published in 1799, says:

"There is no hospital, however airy or well regulated, where this epidemic ulcer is not found at times." (p. 112). "He must indeed be ignorant who disputes this hospital sore being a general disease of the system; he must have observed very little who does not know it to be absolutely an infection." (p. 117). "Is the surgeon to seek for washings and dressings, use ointments and plasters, and expend butts of wine to cure such a disease? No; let him bear this in mind that no dressings have ever been found to stop this ulcer—but, on the other hand, that out of the circle of the hospital the patients are safe; carry them anywhere, and at any expense, even to a stable or a dunghill." (p. 118).

No doubt this was good advice in the absence of any exact knowledge as to methods of disinfection, for even if the infectious material was destroyed in the wounds by the actual cautery, or by applications of fuming nitric acid, there was always danger of re-infection so long as the patient remained in the infected hospital wards.

The total number of cases of gangrene reported during our civil war, as occurring among the wounded of the Union armies, was 2,642. Of these, four cases occurred in 1861; 223 in 1862; 623 in 1863; 1,611 in 1864, and 135 in 1865. 1,361 cases terminated in recovery, and 1,142 were fatal; but in a considerable number of the fatal cases death was due to the original injury or to other complications—septicemia, hemorrhage, etc.

For details with reference to the principal epidemics of hospital gangrene during the war I must refer to the interesting reports of Acting Assistant Surgeon W. W. Keene, U. S. A.; Surgeon J. H. Brinton, U. S. V.; Surgeon M. Goldsmith, U. S. V.; Assistant Surgeon William Thomson, U. S. A., and others, extracts from which will be found in the third surgical volume of the "Medical and Surgical History of the War."

The facts detailed in these reports correspond with those previously observed in various parts of the world, and show that hospital gangrene is a local disease due usually to the infection of wounds from previous cases.

This brings us to the question as to the origin of the primary cases in an epidemic, a question which is of special interest, not only as regards this disease, but in its bearing upon the etiology of other local infectious processes.

Do epidemics originate *de novo* as a result of an increased pathogenic power on the part of some common putrefactive microörganism, or is there a specific "germ" of hospital gangrene? The former supposition appears to me to be more in consonance with the facts relating to the origin of epidemics, and is sustained by extended experimental researches which show that the pathogenic potency of many bacteria is greatly intensified by cultivation in albuminous fluids and under favorable conditions. This is true of the pus cocci, which may thrive upon the surface of the body of healthy persons or upon mucous surfaces as harmless parasites; but which under favorable conditions may invade the tissues producing acute abscesses, erysipelatous inflammations or gangrenous sloughs, according to the pathogenic potency of the micrococcus and the degree of vital resisting power on the part of the tissues. The streptococcus pyogenes from a malignant case of erysipelas or from the abdominal cavity of an individual who has succumbed to puerperal peritonitis may give rise, when introduced beneath the skin of a healthy person, to the most violent local inflammation and to general septicemia. But if cultivated for a length of time in unfavorable artificial media its pathogenic potency may be so reduced that it gives rise to a local abscess only.

The same has been demonstrated, by experiments upon the lower animals, to be true as regards certain bacteria found in putrefying material. Some of these when injected beneath the skin of a mouse, a rabbit, or a guinea pig, give rise to a rapidly fatal septicemia; others cause an extensive inflammatory œdema in the vicinity of the point of inoculation; still others to a progressive gangrene. By inoculating from animal to animal, the virulence of the pathogenic microörganism inducing these morbid phenomena is increased, so that the smallest fraction of a drop of blood, or of bloody serum from the subcutaneous tissues of an animal recently dead from such an inoculation suffices to kill another animal of the same species within a brief period. But there is another element which influences the result when virulent putrefactive material is introduced beneath the skin of an animal for experimental purposes, or into an open wound by accident, i. e., the vital resisting power of the tissues. The body of a dead animal under favorable conditions of temperature is quickly invaded by putrefactive bacteria. But in the living animal such invasion is successfully resisted in many cases, even when putrefactive bacteria are brought in contact with open wounds. This is especially true as regards carnivorous animals, while the herbivora are especially susceptible to local or general infection when putrefactive material is brought in contact with an open wound. There is also a difference in individual susceptibility in animals of the same race. As a rule, young animals are more susceptible than adults, and susceptibility to infec-

tion is increased by depressing influences, such as insufficient food, excessive exertion, bad air from overcrowding or putrid emanations, etc.

It is under such depressing influences that epidemics of hospital gangrene have commonly had their origin. That the disease may originate independently of pre-existing cases seems to be well established by the history of independent outbreaks in distant parts of the country during the war, in new hospitals and among wounded men brought directly from the field of battle.

Billroth, in his "Surgical Letters from the War-hospitals in Weissenburg and Mannheim" (1870), says:

"While I was at Mannheim but a single case of hospital gangrene occurred. This was in barrack J of the hospital which had been placed under my direction. The medical officer of the day did not recognize the disease and first called my attention to it on the third day. Fortunately no other cases had become infected. I cauterized the wound (a gunshot fracture of the upper arm) with fuming nitric acid and after separation of the slough it was again healthy. In Darmstadt, in the great barrack hospital, two or three cases occurred which were treated the same way and isolated. So far as I am informed this was the end of the trouble."

In discussing the origin of these cases Billroth says:

"Where did the contagion come from for the one case in Mannheim and for the cases in Darmstadt? That I really cannot say, but I suspect that the infectious material was attached to lint which had been made from hospital linen, or had been scraped in a hospital in which hospital gangrene existed. This suspicion may appear very singular to many physicians, but will serve to show how thoroughly I am convinced of the specific origin of hospital gangrene."

To the writer it appears far more probable that these were cases of the *de novo* origin of gangrene as a result of the introduction into a suppurating wound of saprophytic bacteria which, owing to favoring conditions in the wound itself or to slight resisting power on the part of the tissues, had acquired sufficient pathogenic virulence to enable them to invade living tissues. It may be that there is some particular saprophyte, which is widely distributed, to which this result is commonly due; or it may be that there are a number of putrefactive bacteria which under favorable conditions may acquire this power of invading living tissues. The result is probably due, to some extent, to the development of toxic ptomaines in the secretions of the wound by putrefactive bacteria present in these secretions, which, being absorbed, lower the vital resisting power of the tissues. Deep and profusely suppurating wounds, and especially gunshot fractures of the larger bones, in which pockets and sinuses occur from which it is difficult completely to remove accumulations of pus, furnish the conditions most favorable for the development of such pathogenic virulence as may suffice to make a saprophytic bacillus a facultative parasite.

The greater liability to the development of hospital gangrene in wounds complicated by fracture of bones is shown by the accompanying table, which is taken from the "Medical and Surgical History of the War." (Third Surgical Volume, p. 824.).

It is a remarkable fact that while the larger number of cases occurred in wounds attended with fracture, the greatest mortality resulted in simple flesh wounds.

From our point of view the etiology of hospital gangrene does not differ materially from that of traumatic erysipelas so far as general conditions are concerned, but the two diseases are doubtless due to different microörganisms. That which is the usual cause of erysipelas is now well known to bacteriologists under the name of streptococcus pyogenes, or streptococcus erysipelatos.

SUMMARY OF 2,642 CASES OF GANGRENE, INDICATING THE RESULT AND RELATIVE FREQUENCY.

Seat of Injury.	Recovery.	Fatal.	Undetermined.	Total.	Per cent. of Fatality.	Per cent. of Relative Frequency.
Flesh wounds of head, face, and neck	5	7	..	12	58.3	60=2.2%.
Fractures and penetrating wounds of head, face, and neck	32	16	..	48	33.3	
Flesh wounds of trunk	36	32	7	75	47.0	216=8.2%.
Fractures and penetrating wounds of trunk	44	97	..	141	68.7	
Flesh wounds of the upper extremities	47	50	12	109	51.5	2,366=89.6%.
Fractures of the upper extremities	476	245	14	735	33.9	
Flesh wounds of the lower extremities	125	127	92	344	50.3	
Fractures of the lower extremities	596	568	14	1,178	48.7	
Aggregates	1,361	1,142	139	2,642	45.6	

Whether hospital gangrene is a specific infection in the same sense that erysipelas is, i. e., an infection due to a specific microörganism has not been determined, but it seems probable that such is the case. It does not follow from this, however, that all cases of these traumatic infectious diseases originate by direct or indirect transfer of the infectious agent from previous cases. Erysipelas does not necessarily result from the introduction of streptococcus pyogenes into an open wound. This streptococcus is frequently found in the pus of acute abscesses unattended with any erysipelatous inflammation. But under favorable conditions it may develop virulent properties, which are manifested especially by a tendency to invade the tissues by way of the lymph channels and along cellular planes, producing a dilation of the capillary vessels and more or less serous effusion, leading often to suppuration and sometimes to necrosis of the invaded tissues. The development of first cases of either disease probably depends upon predisposing causes relating to the individual or his environment. A traumatism is more likely to be followed by erysipelas in a man whose vitality is below par on account of intemperance, insufficient food, bad hygienic surroundings, etc., and the same is true as regards hospital gangrene. Under such conditions the comparatively harmless streptococcus pyogenes may overcome the barriers established by nature to resist invasion by saprophytic bacteria, and having acquired the power to multiply as a parasite in tissues enfeebled by the causes mentioned it soon attains a pathogenic virulence which enables it to invade healthy tissues when transferred by accidental inoculation to another individual.

The view here advanced with reference to the *de novo* origin of erysipelas is supported by the fact that solitary cases frequently occur at remote military posts. Thus during the past year twenty-eight cases are reported as having occurred among the enlisted men of the United States army. Of these eighteen occurred at eighteen different posts, while three posts had two cases each and one post had four.

The facts relating to the etiology of pneumonia correspond with those referred to as relating to

that of erysipelas. In this disease, also, the specific cause has been shown to be a micrococcus (Mic. pneumoniæ crouposæ) which is frequently found in the salivary secretions of healthy persons, and which varies greatly as to its pathogenic virulence. Solitary cases of the disease occur at our military posts, as elsewhere, as a result, no doubt, of predisposing and exciting causes which give the specific cause the mastery over the resources provided by nature for resisting the local infection which constitutes the disease in question.

The total number of cases of traumatic erysipelas reported as occurring in the armies of the United States during the war was 1,097, with a mortality of 41 per cent.

The micrococcus which is now recognized as the usual cause of erysipelatous inflammations is capable of growing either in the presence or absence of oxygen; i.e., it is an aërobic and facultative anaërobic microörganism. We infer that the same is true as regards the microörganism which produces hospital gangrene. But in the case of tetanus, which has been proved by recent researches to be an infectious malady due to a bacillus widely distributed in the superficial layers of the soil, it has been shown that this bacillus is a strict anaërobic. It does not grow in the presence of oxygen and could not thrive in superficial wounds. This probably accounts for the fact that epidemics of tetanus are not common. The cases which occur are for the most part sporadic cases, due in each instance to infection, resulting from the introduction of surface soil or dust containing the tetanus bacillus. Such material in an open wound might be innocuous. But introduced into the depths of a gunshot wound, into a closed amputation wound, or into a punctured wound made by a rusty nail, for example, the tetanus bacilli (spores) present find the conditions favorable for development and this fatal infectious malady results.

Sporadic cases of hospital gangrene probably occur in a similar way, but as there is a free escape of virulent material from the infected wound, the danger of the disease being transmitted to other wounded individuals is infinitely greater.

The total number of cases of tetanus reported in the "Medical and Surgical History of the War" is 505, or a little more than two per thousand of the total number of injuries by weapons of war. More than one-fourth of the cases followed operations upon the extremities; 116 after amputations, and fifteen after excisions. We can scarcely doubt that a majority, at least, of these cases would have been prevented by modern methods of treatment—antiseptic or aseptic.

The same statement applies to the considerable number of cases reported under the heading pyemia. It seems probable that of the 2,818 cases reported under this heading a large proportion were in fact cases of septicemia resulting from wound infection. The very great mortality, and the results of post-mortem examinations made, indicate this; but as it was before the days of bacteriological research there is no direct evidence on record showing the presence of bacteria in the blood and in the metastatic abscesses found in the lungs, the liver, the kidneys, spleen or joints in those cases in which an autopsy was made. Doubtless septic toxemia occurred in numerous cases but, as stated, we infer that a majority of the cases reported under the heading pyemia were in fact cases of septicemia resulting from infection through the wound, by the pathogenic micrococci which are commonly concerned in this form of "blood poisoning," and especially by staphylococcus aureus. The mortality in the class of cases under consideration exceeded 97 per cent. Out of the total number of deaths (2,747) but twenty-one are reported to have resulted from other complications,—viz., hemorrhage seven, gangrene six, tetanus two, erysipelas one, peritonitis one, and typhoid pneumonia four.

One of the questions to be settled by the military surgeon in the next great war, which we earnestly hope will not occur on this continent, is to what extent the large mortality which has heretofore occurred from traumatic infections can be prevented by antiseptic methods of treatment. Certainly there will be no excuse for the occurrence of septicemia after amputations, or for the appearance of erysipelas or hospital gangrene in wounds made by the knife of the surgeon. But how far it may be practicable to prevent such complications in gunshot fractures remains to be seen, and the proper treatment of such injuries is an important point for consideration. If such cases could at once receive skillful surgical treatment, including the removal of splinters, foreign substances carried into the wound by the bullet, and antiseptic dressings, no doubt many would be saved without loss of life or limb. But the changing fortunes of the battlefield often make it impossible for medical officers to give such prompt attention to the wounded. It is generally conceded that on the firing line nothing more should be attempted than the arrest of hemorrhage, and such support to the fractured limb as will enable the wounded man to bear transportation to the field hospital with the least possible suffering. It is here that the fate of the unfortunate victim of war will often be decided, and the responsibility resting upon the military surgeon under such circumstances cannot be overestimated. His decision with reference to operative interference must be prompt, and will often be governed by circumstances other than those laid down in surgical textbooks. How far must the man be transported before he will reach a resting place at a permanent hospital? What are the means of transportation? Is he to be left at the mercy of the enemy as a prisoner of war? Shall his case be passed by because of others more urgently requiring attention? Many a leg must be sacrificed which might be saved under more favorable conditions, and conservative surgery must often yield before the inexorable contingencies of the battlefield.

In future wars the question will be decided as to the propriety of performing laparotomy at the field hospital in penetrating wounds of the abdomen, for the purpose of exploration, and suturing the intestine if it is found to be wounded. This is so important a question that I have attempted to make it the most prominent surgical topic for discussion at the present meeting, and trust that as a result of this discussion we may arrive at definite conclusions as to what our action should be if called upon to treat such cases.

What has been said will suffice to indicate to the young medical officer that much is expected of him; and that in view of recent additions to our knowledge relating to the etiology of the more common camp diseases, and of traumatic infections, and to our resources for preventing and curing such dis-

eases, we have a right to expect a great reduction in the mortality from sickness and wounds in the armies engaged in future wars.

MEDICAL EDUCATION IN THE UNITED STATES.

An Address delivered before the Section on Pedagogy of the Pan-American Medical Congress.

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GENTLEMEN:—The work of this Section is of a character which does not usually form a prominent part in the proceedings of medical gatherings.

In almost any department of education, pedagogy or the science of teaching is a recognized specialty.

The rapid progress which has been made in medical education in this country within the last few years has brought about such profound changes in methods of instruction, and the strides which medical science is making all over the civilized globe are bringing into view so many new fields of work, that the teachers of to-day have a far more complex and difficult task than was presented to their predecessors. The art of teaching medicine has not been taught, in this country at least; the time has arrived to take up the subject.

In introducing such a subject as this, it seems appropriate to take a brief retrospective glance at the history of medical education in this country.

There lies before me as I write, a quaint little volume entitled, "A Discourse upon the Institutions of Medical Schools in America," published in 1765. It bears the following inscription:

"To Doctor John Warren, Physician in Boston, This Copy is presented by his respectful and affectionate Friend, John Morgan, Philad'a, Feb. 27, 1783." This book may be safely regarded as the first contribution to the subject which we are to discuss to-day and the two dates are memorable; the former indicating the foundation of the medical department of the University of Pennsylvania, and the latter the birth of the medical department of Harvard University.

Dr. Morgan justly remarks that "medicine is a science as important in its object as it is difficult in the acquisition. It is very extensive in its researches and presupposes the knowledge of many other sciences. The cultivation of it requires no small abilities, and demands of those who engage in the arduous pursuit an enlarged and benevolent mind."

It is interesting to note that one whom we might justly look upon as the father of medical education in this country and who "had spent five years in Europe under the most celebrated master in every branch of medicine," should have taken so optimistic a view of the knowledge of medicine at that time as to say: "The industry of many centuries has already been employed to bring Physic to that degree of perfection at which it is now arrived." Fortunately he adds: "It will still require a long time to remove the obscurities which yet veil many parts of it."

Three years after this book was written, Pennsylvania held her first medical commencement and the provost justly remarked: "This may be considered the birthday of medical honors in America."

The men who started this movement had received much encouragement from across the ocean and the remark of one of their teachers, Dr. John Fothergill of London, is of special interest to those concerned in the work of this congress. Writing to James Pemberton in 1762 he recommends Drs. Shippen and Morgan as men well qualified for the work of teachers, "both of whom," he says, "will not only be useful to the province in their employment but if suitably countenanced by the legislature will be able to erect a school of physic among you that may draw students from various parts of America and the West Indies."

During the colonial period of our history it was the custom for young men who entered upon the study of medicine to become regularly apprenticed to some practitioner for a term of three or four years during which time the preceptor was entitled to the students' services in preparing and dispensing medicine and serving as an assistant in minor surgical operations. As a return for this, the physician was obliged to give the student detailed and thorough instruction in all the branches of medicine. Many of the leading men frequently had several students in their office, constituting a small class, who were drilled as regularly in their studies as they would be in college. In some instances the term of apprenticeship was extended even to six or seven years.[1]

When the medical school sprang into existence it was at first intended merely to supplement the apprentice system, and as means of communication of one part of the country with another were exceedingly limited it was found desirable to concentrate school work into as small a part of the year as possible. Hence the origin of the short term of four months which has clung so persistently to the American system.

I will not undertake to weary you with a detailed account of the history of the development of our system of education. Suffice it to say that the close of the century found schools established not only in Pennsylvania and Massachusetts but in New York, Maryland and Vermont. There were, however, in 1810 only five medical schools in existence with an aggregate number of medical students of about 650, of whom 100 received the degree either of bachelor or doctor of medicine. The bachelor's degree was given to those who had attended one full course of college instruction. It was hoped that such students after a short period of practice would eventually return to take the higher degree, but as this expectation was not fulfilled the degree of bachelor of medicine was soon wisely abolished.

A noticeable feature of the education of that early period in our medical history were the requirements for a high standard of general education. Those students who did not possess a college degree were expected to pass an examination in Latin, mathematics and "Natural and Experimental Philosophy."

To obtain the degree of doctor of medicine it was necessary that the applicant should have been a bachelor of medicine for at least three years, should have attained the age of twenty-four years and should write and defend a thesis publicly in the college.[2]

When we consider how imperfect was the knowledge of chemistry, physiology and even anatomy, and many other branches of medical science, and how

[1] N. S. Davis, Med. Ed. and Med. Institutions in the United States of America. 1877.
[2] William Pepper. Higher Medical Education. 1877.

little of what we now consider the foundation of medical education there was to teach—such a course cannot be regarded as a very complete and exacting one.

"Under these influences the first thirty years sufficed to cause the bachelor's degree to be abandoned by all the schools, the number of professors in each school to be double, and the length of the annual college term to be shortened one-third." (Davis.)

Such was the standard of education with which the present century opened. New schools continued to be created, not infrequently in connection with some university, as in 1810 at Yale University, in 1817 in Lexington, Ky., in 1820 at Brunswick, Me., in 1825 at Charlottesville, Virginia, until in 1840 twenty-six new medical colleges had been added to the list, the whole number of students in the country amounting to 2,500, the population in that year being 17,069,453.

A glance at the report of a committee to the Medical Society of the State of New York in 1833, gives a good idea of the amount of work done by the schools at that period.

In the twenty schools mentioned in this report the number of courses of lectures required was two, with one exception—that of the University of Virginia, where three courses were required; and to the credit of this university be it said, the length of each course was ten months, whereas, the almost invariable custom of the other schools was to give a course of four months' duration only. The time of study purported, however, to be in all cases three years, "including the time devoted to lectures," as is stated in most of the reports. This straw indicates that at that time the chief dependence, or nearly so, was placed upon the extra-mural instruction which was given to the student. At Yale University there was this additional requirement, namely, that the student was required to study four years, "if he had not graduated," which phrase, I presume, means if he had not already taken the academic degree. This seems to be the first intimation that a longer term than the standard then set was necessary for a complete equipment for the practice of medicine.

The Medical Institution of the State of Georgia (incorporated in 1828) gave at first the bachelor's degree with one year of study, but immediately abandoned it for the usual curriculum.

In the University of Pennsylvania, to which we look for the standard in these early, as well as later days, two full courses were required, but as in many other schools one course only was demanded from those who had attended a course at some other reputable school. In addition, a course of clinical instruction in one of the Philadelphia hospitals was required.

The course was then three years in length, but as each course of lectures lasted only four months, it was expected that during the remaining portion of the first two years the student should receive private instruction.

As the period of the school term was so short, it is interesting to note at what time of the year the various courses of lectures began.

This, it will be seen, varied greatly according to the geographical position of the institution. At Dartmouth and the University of Vermont the term began in August. In Bowdoin College, Maine, however, it began in the middle of July, continuing until the middle of May that is, the term time in the far north was in the summer or spring.

At Yale and Harvard and in Philadelphia and New York the term opened at the end of October or the beginning of November, as did also the schools in North Carolina and Kentucky. The University of Virginia, with its long course of ten months, began September 10.

Although the term time was exceedingly short in some schools a large amount of work was crowded into the daily routine of the students. Five or six systematic lectures a day, with attendance on clinics and dissections when possible, was considered nothing more than a fair amount of work for the medical student to digest properly.

This system of teaching remained practically unaltered in 1851, if we may judge from a report to the Committee on Medical Education of the American Medical Association.[3] In regard to the private instruction which was supposed to continue during the remaining eight months of the year, the report states that a very large proportion of students simply read medicine under the direction of their preceptors. Anything like careful instruction upon the part of the teachers did not exist. The student neither while attending lectures nor while in his preceptor's office was encouraged in anything like faithful and rigid study. To remedy the defect, private schools for teaching medicine were founded by enterprising physicians and surgeons and these quiz classes which were then inaugurated, became a prominent feature of the national system of teaching. Many a distinguished professor has first won his spurs at these private schools, and many valuable experiments in medical education were carried on by these men. As the college term has lengthened, the necessity for these accessory courses has diminished, and in many cities the extra-mural instruction, whether by private school or by teacher, has passed into history. No one will, I presume, regret the departure of the year of private teaching, "by some respectable practitioner," whose certificate, purchased by a handsome fee, came eventually to have so little meaning. When this custom was first inaugurated it was the sole method of inspection, and during the long period of apprenticeship the student received a large amount of instruction of the most valuable sort. When the medical school came into existence the attempt was made to combine the two systems. The practitioner, relieved from the responsibilities of giving a complete course of study to the student, gradually relaxed his efforts as a teacher until this part of his daily work came to have only a nominal value.

According to Davis it consisted in 1877 in little more than the registry of the student's name in the doctor's office, permission to read the books of his library or not, as he chose, and the giving of a certificate of time of study for the student to take to the medical college where he expected to graduate.

At the beginning of this century the successful practitioner gave a prominent place in his household to the medical student. I have often heard my father and many other practitioners of his day tell stories of the school life of those times. The office in the old homestead where I began the practice of medicine, then a luxurious library, was in those times a plain room with a sanded floor, occupied during the day by a small band of medical students who all

[3] W. Hooker, M.D. 1851.

boarded in the same house. The old room was the scene of many amusing stories of schoolboy life, and also of thrilling tales of escape from the indignant pursuer, by the hero of some graveyard scrape which was rendered necessary by the peculiar laws of that period. This phase of student life has long since passed away and the equally agreeable and far more profitable experience of hospital life has taken its place. Would that I could add that such hospital experience was now the privilege of every medical student in the land.

As we approach the middle of the century, we find the nation growing rapidly in population and prosperity, and a corresponding increase in the numbers and activity of the medical profession. From 1830 to 1845 the number of medical schools in the United States had more than doubled.

At a meeting of the Medical Society of the State of New York in 1839, when the subject of medical education was brought forward, it was proposed to hold a national medical convention the following year in Philadelphia, consisting of representatives from the different schools and State societies. No response was made to the action of this society, but in 1844 Dr. N. S. Davis, then a delegate from Broome county, New York, offered a resolution that a national convention be called in 1846, and the American Medical Association thus sprang into existence, the fundamental idea, which brought about the formation of the association, being the improvement of our system of medical education.

It was high time that some such movement should take place, as the rapid increase of the number of medical schools brought with it a constant increase in the laxity of methods of teaching.

The equipment of a new school was sometimes pathetic in its meagerness—a mannikin and a few lecture rooms constituting the entire "plant" of the infant institution. It would not do to question the dean too curiously about the clinical facilities which the school enjoyed; and as for laboratory work there were few teachers sufficiently advanced in their ideas to think of criticising the absence of such instruction. There was, indeed, no time for it. Every available space in the tabular view was filled with lecture hours. Professors were asked to come from neighboring towns to assist in teaching, and often gave two lectures in the same day. This cramming process, which seems so peculiarly American in its hustling activity, is perpetuated to the present day in a limited number of schools, chiefly those situated far from medical centers. As Oliver Wendell Holmes has said, life at that time was cheap; medical visits in the country were worth only twenty-five cents apiece, and the ambitious student could not afford to make an expensive outlay for his future work.

The American Medical Association therefore justly put on record its opinion, "that the abuses which exist in the modes of medical education pursued in this country demand the serious consideration of the profession," and at each meeting it continued to sound a note of warning on this all-important subject.

One of the principal reforms which it proposed to bring about was the lengthening of the term of each year from four to six months, and you will doubtless be somewhat surprised to hear that at the second meeting of the Association, which was held in Boston, a paper was presented from the faculty of Harvard University opposing this proposition.

Tempora mutantur et nos mutamur in illis.

If Harvard was unwilling to lead in the matter of reform at that time, it is not surprising that the other schools should not have been persuaded to change their customs. To the Chicago Medical College—which was founded in 1859—must be given the credit of having been the first to attempt to lengthen the college course and to establish the system of teaching upon the so-called graded plan.[4] The school was in fact organized for this express purpose.

Little change was, however, effected by the Association in the methods of teaching at that time, although the discussions which were constantly held were destined eventually to bring forth good fruit. During the following decade little was done in the way of reform.

Graduating from the academic department of Harvard in 1863, I had an opportunity to study personally the methods in vogue at that time and am the more competent to express an opinion as I passed one year of my course of study in Philadelphia. The old system of medical education was then in all its glory and presented a striking contrast to one who had been subjected for four years to the strict discipline of a well conducted university.

The course of lectures in Philadelphia began about the first of November, and the day was occupied in a bewildering succession of lectures, on all of which the student felt called upon to attend, as he had been obliged to "take out tickets" for the full course. The teachers were able, conscientious, and in many cases brilliant men, and many a lesson then learned has been of value in after life. Clinical teaching was, however, largely crowded aside by the superabundance of systematic lectures. The course came to an end on the first of March, and the class—which was an enormous one—was allowed to scatter to the four quarters of the country. Many of my classmates returned the following autumn, and after attendance on a second course of lectures and having also handed in the certificate of study from the "respectable practitioner" were able to graduate in the following March; that is, after having been connected with the school less than eighteen months. This may appear to the younger members of this Section an absurdly short curriculum, but there were a considerable number of enterprising young men who did not propose to occupy so long a time in obtaining their education.

You will remember what has already been said about the period of the year occupied by the school term. At that time there were not only schools who had their college "year" in the winter, but there were spring "years" and summer "years" as well.

Several of my friends proposed accordingly, after leaving Philadelphia in March to take a spring "year" at another school, in accordance with a custom which many at that time followed. Such a student was therefore able on July 1st to show to the examining body, tickets for two full courses of lectures and a letter testifying to private instruction. It was notorious that many students at that time were able to obtain a degree after nine months only of medical study. The custom of short courses of study at different periods of the year unfortunately still prevails. This zodiacal paradox has not yet been fully eliminated from the medical calendar. The condi-

[4] N. S. Davis. Contributions to the History of Med. Ed., etc., 1877.

tion of teaching at Harvard was practically the same as at Philadelphia.

It is not surprising that the best class of students were dissatisfied with the opportunities, and that the number of those who found it necessary to go to Europe to complete their education was constantly increasing. Two and even three years of study was not considered too long a time to occupy in this manner. It is true that spring terms of a supplementary nature were organized by most schools, and those students who chose to remain could receive instruction throughout the year. The majority of students, however, disappeared, many of them employing their time in other occupations to earn sufficient money to pay for a second course of lectures. The class of individuals who studied medicine at that time seemed far inferior to the medical student of to-day in culture and refinement. President Eliot says of the medical students of that period: "In this university, until the reformation of the school in 1870-71, the medical students were noticeably inferior in bearing, manners and discipline to the students of the other departments; they are now (1888) indistinguishable from other students."

The date which I have just mentioned marks the era of a great change in the history of medical education. The rising generation of teachers were not content with the antiquated methods of a previous century; they had learned of a new order of things in the centers of medical learning in Europe. As the old generation of teachers went out and a new one came in, the modern ways of teaching grew into a substantial system which had come to stay. Harvard adopted the graded course of three years' study, but she did also far more than that—and in this respect she stands in advance of almost every other school in the country—she lengthened her course to nine months, so that her two terms correspond with those of the other departments of the university and represent a full year's work.

I will not undertake to record the history of the reform in medical education since that time; it is familiar to most of you. The example which has been set to the rest of the country by the University of Pennsylvania and by the College of Physicians and Surgeons of New York is too well known for me to repeat them here.

While criticising, as I have done, the work of a previous generation, I ought to remind you that our forefathers accomplished what they did only by individual efforts. There were no governments, and as a rule no liberal benefactors to back them in their undertakings. Their schools had to be conducted on business principles, with a keen eye to the practical success of their venture. During the past twenty years, it is true, a number of State universities have been established. In the University of Michigan, and possibly in one or two other State universities, the medical professorships like those of other departments, are sustained by the income from the general endowment, independent of fees derived from medical students; but, as a rule, the success of the school has depended upon the patronage which it has received. It may be justly said, therefore, that the whole system of medical education in this country is the spontaneous outgrowth of the work of the medical profession, and that it is due to their public spirit and disinterestedness that so important a department in the educational development of a great nation has been brought to its present state of excellence.

The good work has, however, but just begun. The reform of medical education is still in its infancy. If we are to believe all the glowing announcements which we read in the annual catalogues of the various schools, we might be lulled into a sense of calm security for the future; but, unfortunately, the actual practice of many, I might say a majority, of the schools does not come up to the ideals which are here set forth.

The essential points in the new scheme of education have been well stated by our President, Dr. Pepper:[5]

1. The establishment of a preparatory examination.
2. The lengthening of the period of study to at least three full years.
3. The careful grading of courses.
4. The introduction of ample clinical and laboratory instruction.
5. The establishment of fixed salaries for the teachers.

In a general way we may obtain some notion of the improvement which has been made by a study of the report of the Illinois State Board of Health for 1891. According to this report there are now 148 medical schools of all kinds in the United States and Canada. The number of those requiring certain educational qualifications for matriculation is 129.

The number of schools requiring attendance on three or more courses of lectures was, in 1882, twenty-two. In 1891 the number was eighty-five.

There has been also a gradual increase in the duration of the lecture terms from an average of 23.5 weeks in 1882–83 to 26.3 weeks in 1890–91. In 1882–83 there were eight colleges that had but sixteen weeks; the number of colleges having terms of six months or more is now 111. The number of colleges which have graduated students at the end of the second course of lectures the present year is less than 10 per cent. of the whole number of schools in the country.

There are now in the United States thirty-two examining and licensing bodies that do not give instruction. Although the work of these licensing boards is far from uniform, a great deal has been accomplished by them. There are at the present time fifteen States with Practice acts that require an examination of all persons desiring to practice medicine in the respective commonwealths. These States include nearly 50 per cent. of the entire population. In many States the whole complexion of the medical practice has been changed by the clarifying influences of these bodies. The reports on medical education by the Illinois board, I do not hesitate to say, have exerted a more powerful influence on the movement in education than any other publication which our medical literature has produced.

The effects of these Medical Practice acts which establish a minimum of time spent at medical lectures and provide an examination for those who wish to become practitioners, are shown in the statistics which have just been given. At the present time State examinations are required in Minnesota, North Dakota, Montana, Washington, North Carolina, Alabama, Florida, Virginia, New Jersey, New York, Nebraska, Maryland and Utah.[6]

[5] Introductory Address, Philadelphia, 1877.
[6] Millard. "The Necessity and Best Methods of Regulating the Practice of Medicine," Journal Amer. Med. Ass'n., July 30, 1892.

Millard, who has had experience in framing the act of Minnesota, believes that it would be an improvement upon the Medical Practice acts at present in existence, to separate the two functions of the board, the licensing power and the educational supervision. He thinks that the best interests of the public will be observed by assigning the duties of the State licensing power to the various State Boards of Health. The regulation of all forms of education should, on the other hand, be vested in a central power consisting of a single board, to be known as a State Bureau of Education, with power to regulate all educational institutions granting degrees, together with the power of granting charters and revoking the same; particularly should this apply to all institutions wishing to afford the community any of the various forms of higher or special education.

Having thus sketched the progress of medical education up to the present time, let us now glance at some features of the present system in which it is desirable that further improvement should be made.

The importance of a preliminary training for the study of medicine is a problem which has occupied the attention of our most prominent teachers. That the medical student should have received a fair amount of education goes without saying. The importance of a proper preliminary education is thus forcibly stated by that most experienced of German teachers, Professor Billroth. He says in reply to the objection to a preliminary study of the natural sciences as a basis of a medical education:

"The educated of all nations should not fail to encourage to their utmost, knowledge and study—in all countries and stations of life they should not fail to maintain the standard which they have set up, both for themselves and others; they should not fail to support the government in all efforts directed towards this end.

"The physician, the lawyer, the school teacher and the clergyman form the nucleus of culture in the community; they are, especially in the country or small towns, the representatives of the educated element of society. The people seek their advice in time of need, and they are their sole source of knowledge in many things.

"To neglect the education of such persons, to lower their mental and scientific standard, to bring them up so that they know no better education than the tradesman, the tailor and the cobbler, would be, in my opinion, the suppression of the educational development of a nation and is a policy both corruptible and immoral in principle, as it would inevitably ruin a nation and bring it prematurely to that point of decadence where it would become the prey of others."

The importance of these views is fully appreciated in Germany, where the professional schools are integral parts of the university, and entrance to the professional schools depends upon the previous completion of the course in philosophy, a course which corresponds to that of our academic degree.

In Dr. Holmes' suggestive article[7] on this subject it is shown that while the increase in the total number of medical students has been very great during the last decade, the increase in the number of "college men" who have entered the profession has been very slight, and in some of the more prominent schools the percentage has even slightly diminished. The author says: "It can not then be doubted that relatively a smaller number of medical students have a bachelor's degree than in 1880, though the education of the average medical student is superior to the average medical student ten years ago." Although the proportion of medical students to students of law and divinity is greater in the United States, the relative proportion has diminished in the last ten years, whereas in Germany in the same period, a period during which medicine has become more of a science and the domain of surgery has increased under antiseptic methods, the proportion of medical students to the students of other professions has greatly increased. The reason for this variation in the proportion of students in the two countries is explained by the imperfection of our system of education. Educators have not had proper control and medicine has not been placed upon that dignified scientific basis which it enjoys in Germany. Dr. Holmes complains that the medical department is neglected by every university in the United States. "It is farmed out or left to shift for itself."

Harvard has recently made an attempt to overcome the difficulty by a modification of the academic course. As Welch points out in an article on this subject:[8] If a young man choose the medical profession he should devote at least four years to medical studies, including the preliminary sciences. If he supplements this with a year in a hospital and a year or two in study abroad, and all this work has been preceded by a college academic course, he would not be able to enter upon the practice of his profession much before the age of thirty.

Dr. H. P. Bowditch,[9] dean of the Medical Faculty of Harvard, has strongly advocated a change which would overcome this difficulty. The average age of students who enter the Harvard academic department, as President Eliot has shown, has been gradually rising during the whole of this century until it has reached nearly nineteen years. The student who enters the medical school therefore finds himself just beginning the preparation of the real work of his life at an age when many of his contemporaries are already engaged in the productive work of their professions. In Germany the best class of students begin their professional studies at a little earlier age than that at which our young men enter Harvard College. As the course of study leading to the degree of doctor of medicine lasts five years, it follows that the German physician is ready to begin practice before he is 23½ years old.

The average age of matriculants at Oxford is 19 years, and it is perfectly possible for an Oxford student desiring to study medicine to begin his purely professional studies before the end of his second year of college life. The dean writes me upon this subject as follows:

"There are many students in our school who have had one or two years of college life either as special or regular students, and these have entered the medical school because they have felt the necessity of getting started in their life work. These men would have been glad to take the A.B. degree if it could have been procured in a shorter time, but they consider it too dearly purchased when it involves so much delay in beginning their professional life."

It seemed, therefore, reasonable to the medical faculty of Harvard to make the following proposition, namely, that the academic council should consider the expediency of granting the degree of A.B. to all undergraduates who should subsequently take the longest course of study offered at the professional school after three years' attendance in the academic

[7] "The Forthcoming Report of the Bureau of Education on Professional Education in the United States," Jour. Amer. Med. Ass'n., January 14, 1893.

[8] Some of the advantages of the union of Medical School and University. 1888.

[9] Remarks made at a meeting of the Academic Council, 1887.

department—the professional degree and that of A.B. to be given simultaneously at the end of the professional course. One of the medical studies at least can be obtained in the usual college curriculum, and general chemistry is frequently "anticipated" by students who enter the medical school. It is hoped, indeed, that this course will soon become one of the "preliminary studies" to medicine. It would be a short step to place one or two more of the scientific medical studies on the list of academic electives, and a whole year could be thus anticipated. The relations of professional schools to the university are not appreciated in the same light that they are in Germany, and the proposition of the medical faculty after much discussion was finally declined. The advantages of a more intimate relation between the medical school and the university are clearly set forth by Welch in the article referred to. The duplication of laboratories is thus avoided, and men of different branches of sciences are brought more intimately together. The important departments of botany, zoölogy, and comparative anatomy cannot fail to have an elevating influence upon the work done in a medical school. How much more rapidly might not original investigation progress when different branches of science work in a common cause. It is here that the great strength of German science and progress takes its origin.

A movement in the same direction is the establishment in our colleges and scientific schools of courses of tuition, intended specially for the benefit of those who intend ultimately to study medicine. Such a course has been planned by Prof. Shaler in the Scientific School of Harvard, and a similar course is offered by the Institute of Technology.

Professor Shaler's course preparatory to medicine consists of two years. In the first year we find physics, zoölogy, botany, general chemistry, rhetoric and elementary French or German, and freehand drawing among the studies required.

In the second year there is botany, zoölogy, comparative anatomy, geology, comparative osteology, physics, qualitative analysis and themes.

It is certainly to be hoped that the medical teachers of the United States will not remain content with the very elementary examinations which are now demanded for those students who have not received a college education.

The advantage of a previous college training is shown in some statistics given by Billings[10] of examinations conducted by the examining boards of the army and navy. Of those candidates who had a college degree 34 per cent. were successful, and of those who had no such degree 28.9 per cent. succeeded. It is interesting in this connection to note that taking the medical schools of Harvard, Yale, the College of Physicians and Bellevue Hospital of New York, the University of Pennsylvania, and the University of Virginia together, 46.1 per cent. succeeded, while for all the rest of the schools in a body 22.3 per cent. succeeded.

One of the most prominent features of the new education is the character and amount of laboratory work which is now required by our medical school. The new building of the Harvard Medical School, erected twelve years ago, showed the importance which its faculty attached to this means of teaching the student. Already the large addition of the Sears laboratory has more than doubled the facilities of this department of the school. The University of Pennsylvania has felt the necessity of increasing the facilities of laboratory work and has received a munificent endowment for its department of hygiene. The literature of this part of our educational system is already becoming voluminous. The recent reports of Vaughan and Holmes in behalf of the work done at the University of Michigan and of the College of Physicians and Surgeons of Chicago, respectively, show the interest which is taken in this subject in some of the western schools.

General chemistry forms so large a part of the first year's work in the Harvard Medical School that it is proposed to make room for other valuable work by making this study one of the requirements of admission. This course is already anticipated by most of the college graduates. The course on embryology and histology is at present a required one, and lasts throughout the year. Students are obliged to keep books in which drawipgs are made of the specimens studied and these books are examined by the teacher. Those who do not possess microscopes are provided with them by the school, and the equipment of this department enables it to handle classes of 150 students. Prof. Minot, who conducts this course, urges the addition of a course on biology to the work of the first year, as it would not only enable the student to pursue many of his studies more intelligently, but would add greatly to the value of all original work done by the student or physician.

The new four years' course has been so arranged that the technique of bacteriology comes in the first year. This is a time when the student has more time for laboratory work, and it paves the way for special work in the study of these organisms in connection with pathology, which is placed in the second year. I shall leave a more detailed statement to Prof. Ernst, who will have something to say upon this subject later. Bacteriology needs no special plea to-day. It cannot even be regarded as a purely scientific study. No practitioner of medicine or surgery who emerges from one of our schools to-day should be considered properly equipped for his work unless he has been trained in such a laboratory. No physician can expect to unravel the secrets of disease without a practical knowledge of the demonstration of certain forms of bacteria, and there is certainly no better school for aseptic surgery than the bacteriological laboratory.

The study of pathology at the Harvard Medical School[11] is conducted by Professor Councilman, not only by lectures, but by demonstrations, recitations and exercises in pathological histology. The latter course, which has hitherto been optional, is now obligatory. The relation of bacteria to disease is taught by the study of certain types of disease, as tuberculosis, suppuration, pneumonia, etc.

Demonstrations are given twice a week of material obtained from the hospitals and private practitioners. This is a laboratory exercise. Individual members of the class are called upon to study the specimens. They then carry them around to the other members of the class and demonstrate and explain to them the lesions. Each student in this way has the specimen demonstrated to him. In the course on pathological histology the student is required to make drawings of the sections studied.

[10] Ideals of Medical Education. 1891.

[11] Bulletin of the Harvard Medical School Association. No. 4.

An opportunity is given to a certain number of men, who have gone through with their course in pathology to act as demonstrators the following year and to assist in teaching. Places are assigned in the pathological laboratory to a certain number of students who have done well in their studies, and opportunity is given them for special study or original investigation.

A type of laboratory course, which I think is peculiar to Harvard, is that on the application of bandages and surgical apparatus. It is a purely laboratory course, is given to students at the beginning of their second year and is confined to a detailed study and drill in the practical part of such work. Bandaging is taught upon the living subject and upon wooden models. The feature of this course which is perhaps most valuable is the preparation and application of all the forms of stiff bandages. In this way every member of the class learns thoroughly the elementary part of this work before he begins to practice upon patients in the hospital, and no student leaves the school without becoming an adept in the application of the stiff bandage.

Another subject which is receiving more and more attention yearly is that of clinical instruction. The weakness of this feature of medical education was one of the glaring faults of the old system, and arose out of the fact that hospitals were far less numerous than they are at the present time, and that, from the necessities of the situation, the independent origin of the medical school became a custom which has continued almost unimpaired to the present day.

In Boston the medical school flourished for nearly one-third of a century before its teachers realized the importance of this problem. A circular was then issued in 1810, in which the statement was made that "a hospital was an institution absolutely essential to a medical school." Would that all teachers of that time had realized sufficiently that fact and had educated the public to recognize the necessity of such a close relation of the two. Many of the older members of this congress can remember the old-fashioned prejudice which resented the intrusion of students into the hospital wards. The theory of the trustee of that time was: This money was given for the cure of patients and not for the education of physicians. They could not be persuaded that the two interests were identical.

The change of feeling in more enlightened times was indicated by the benefactor of the great Johns Hopkins hospital. At the opening of that hospital in 1889 Dr. Billings showed the advantage of such a union in the following words:

"It is well known to those familiar with the subject that the sick in a hospital where medical instruction is given receive more constant, careful and thoughtful attention than do those in a hospital where no such instruction is given. The clinical teacher must do his best; keen eyes will note every error in diagnosis, every failure in results of treatment. Moreover, the very act of teaching clarifies and crystalizes his own knowledge in attempting to explain, the dark places become prominent and demand investigation, and hence it is that those cases which are lectured on receive the best treatment. I need say nothing here on the other side of the question; the value of properly trained physicians to the community and the necessity for hospital instruction in such training. Johns Hopkins understood all this, and especially directed that 'in all your arrangements in relation to this hospital you will bear constantly in view that it is my wish and purpose that the institution shall ultimately form a part of the medical school of the University.'"

The reaction in favor of clinical teaching is becoming daily stronger, and no school can hope to compete with the great schools of the country which does not have control of what is usually called "clinical facilities." This term must unfortunately still be used; for the number of schools which have a hospital of their own is yet exceedingly small. The union between the two is in most of our large cities becoming a more and more intimate one.

Another immense advantage which the possession of a hospital gives to a faculty is the control of appointments. Most schools are now obliged to select their teachers from members of the staffs of hospitals in their city who have services at times of the year which enable them to teach. These individuals are appointed by laymen who have no knowledge of or regard for the necessities of medical education. Faculties thus placed are unable to select teachers of national reputation, as there is no appointing power which enables them to give such a person the material with which to teach. This is a grave defect in our system, and one which the leaders in medical education should not forget to impress upon the profession and the public.

But, while applauding the movement in favor of clinical teaching it is perhaps well at the present time to consider whether systematic or, as it is usually inaccurately called, "didactic" teaching should be abandoned. The discussion as carried on in medical journals, appears to lean in this direction. A course of systematic lectures enables the teacher to cover ground which he would be unable to do, even in a clinic most richly endowed with material. The method of handling the subject differs entirely from that adopted at the bedside, and in a well regulated four years' course I believe the systematic lecture should still retain a prominent place. Clinical instruction should be abundant and of the most varied kind. Instruction of the class in small sections is a most desirable feature of this department. It involves a greater expenditure of time, an increase in the teaching staff and great ability as an organizer in the head of the department. It is the squad drill, however, which brings the student in most intimate contact with disease.

To carry out these ideals necessitates a "plant" far in advance of that which the average school now possesses. No such enterprise can be undertaken without that aid which has hitherto been conspicuous by its absence. I refer to endowments; the valuable paper of Dr. Bayard Holmes already referred to gives some interesting data on this subject. He says:

"The productive funds in the hands of medical schools, both those connected with and those independent of universities in the United States was in 1889, $249,200, while at the same time there was in the hands of schools of theology productive funds to the amount of $11,939,631. The value of buildings and grounds used by medical schools at the same time was $4,047,618, and the theological schools were accommodated with buildings and grounds valued at $7,762,095. The medical schools had in 1889, 12,238 students who paid tuitions to the amount of $763,761, while at the same time the theological schools enrolled 6,989 students.

I am able to reinforce these figures by an abstract of the statistics for medicine, theology and technology as reported to the Bureau in June, 1892. The medical schools possessed buildings and grounds in 1892 valued at $7,507,937, and productive funds amounting to $611,214. Medical departments of State universities also received State aid in 1892 amounting to $40,500, which, if capitalized at 5 per cent., would be equal to an endowment of $810,000; making a total endowment of $1,421,214. There were 16,731 medical students in attendance.

The theological schools report productive funds amounting to $17,599,979, and stated, at the same time, the value of their buildings and grounds was $10,720,860. They had 7,672 students in attendance.

Technological schools report productive funds amounting to $13,229,940. These institutions received from State appropriations or municipal aid in 1891-92, $747,504, which, if capitalized at 5 per cent., would be equivalent to an endowment of $14,950,080; making a total endowment for schools of technology of $28,180,020. There were enrolled in the schools of technology 10,921 students, about one-third of whom were in preparatory courses. It will thus be seen that the endowment of theology is increasing at the rate of about two million dollars a year. The technological schools are well provided for, but medicine has scarcely raised its endowment, even at the most liberal estimate, to a million and a half."

Probably the available funds possessed by our medical schools are somewhat larger than these statistics show, but they give the proportions which are needed to impress upon us how little financial encouragement medicine receives. When we realize what a valuable factor the medical man is in the rapidly increasing development of the territory of a vast and prosperous country like ours, it seems as if his claims to receive encouragement should be listened to. He does not build railroads or organize society in new lands, but he is in the foremost rank of pioneers, with the complete equipment which our teachers can give him to-day, and he becomes a most valuable member of society. He protects the young colony from epidemics; without him State medicine could not exist, and States could not be provided on a basis which could ensure prosperity.

These ideas should be impressed upon our men of wealth and upon the State governments as well. In the meantime it is important that we should adopt as a principle in our new departure in education that the medical faculty should have personal control of hospital wards and management. Let this work begin in a small way at first, but with a view to future development. Such a change can only be brought about by a slow process of evolution. The sooner, therefore, the principle is recognized and adopted, the better. It is difficult for a prosperous school which has abundant opportunities for bedside teaching to realize this, but it can not develop beyond a certain point until it has established its own independence.

I cannot help believing that in this direction lies one of the greatest avenues of development of our system of medical education in the future.

ADDRESS OF THE PRESIDENT OF THE SECTION ON NEUROLOGY AND PYSCHIATRY OF THE PAN-AMERICAN MEDICAL CONGRESS.

BY C. D. HUGHES, M.D.
ST. LOUIS, MO.

Colleagues of the Continent:—I bid you cordial welcome. For the first time in the history of the world the medical profession of all the Americas meets fraternally for mutual work and words of counsel for the welfare of the North and South American medical profession and people.

In this Neurologic and Psychiatric Section, brothers, we also, for the first time, grasp the hand of fellowship. We heartily clasp hands with you and in our hearts we embrace you, with the prayer that nothing shall ever dissever the friendship between the Northern and Southern American profession now so auspiciously consummated. May the final handshake between the profession of the North and South American States never be permitted to take place. We want your friendship forever. So long as "earth grows a plant or sea rolls a wave," we pray that it may endure, growing closer and closer in ties of inseparable fraternity.

In our special departments of medical research and labor we have a common interest, and in every department of medical investigation and advance, our interests are likewise mutual. The sanitary welfare of all the American States is alike. The same hygienic, therapeutic and pathologic problems press upon us all for solution; the medical discoveries of each one of these States redounds to the welfare of all the others.

To this end, therefore, we salute and welcome you, wishing you health and happiness, through a mutually advanced and glorified medical profession, and in behalf of the Neurological Section of this great Congress, I join you in the sentiment, "*America laudamus—viva Americana!*"

Before proceeding to the work before us, it may prove a source of pleasure and profit, and it certainly is flattering to our professional pride to note some of the neurological advances of our day and especially the contributions of neurology to general medicine and the consequent welfare of the world.

None of the many victories in the onward march of American medicine during the century now nearing its close, have contributed, or are destined yet to contribute, more to the happiness of mankind than the light which has been thrown on the nature and treatment of inebriety, dipsomania and chronic alcoholism and their neural sequelæ, especially multiple neuritis.

To a distinguished American physician, signer of that Declaration which gave a nation birth, surgeon-general of the Continental army and teacher of the practice of medicine in the first medical university founded in America, Dr. Benjamin Rush, the scientific world is indebted for having taught that inebriety is a disease. His followers, living in the Pan-American States, taking their cue from this distinguished pioneer medical *savant*, have pursued the study until the therapeutics of inebriety has become as successful as that of any other grave nervous disorder and its pathology as well understood, while medical philanthropy, following his advice,[1] has erected hospitals for the cure and care of its unfortunate victims, though, as yet, no monumental shaft mementos, as it should, a nation's grateful memory of Benjamin Rush's noble work.

We record, also, with satisfaction scarcely exceeded by that we enjoy from contemplating the salvation of the inebriate, the successful cure of the opium habit and other kindred forms of baneful drug enslavement. Yet it has not been long since that once brilliant *litterateur*, De Quincy, himself enthralled, proclaimed in despair the "pangs of opium" and the "Illiad of woes" its enslaved victims hopelessly endured.

The opium fiend, as he is with cruel facetiousness so often called, need not be longer regarded as a hopeless wreck if the hand of charity will only conduct him within the pale of professional resource.

[1] "Diseases of the Mind," 1812.

This and alcoholism and all similar forms of nervous derangement are now treated successfully much like certain forms of mental aberration are—by change of environment, by therapeutic repression, including hypnotic support and reconstruction of the damaged and aberrantly-acting neuropsychic centers. This is another jewel medicine offers for the crown of modern progress.

Notwithstanding the illustrious names which, in our own day, the world beyond our geographical boundaries has given to medical science, our American States have likewise their great physicians whose offerings on the altar of that science whose special care is the welfare of man, are worthy of exalted place beside the Old World's gods. For the Virchows, Charcots and Lombrosos, Maragalianos and Kowalewskys, Gulls and Horsleys, of world-wide fame beyond our shores, we have given to the world our Brown-Séquard, who went from America to cosmopolitan fame; our Hammond, another pioneer American neurologist whose books have been translated into all the languages of civilization; our Seguin likewise, and our Pepper, President of this Congress and the peer of Sir William Gull of Great Britain, and Ferran, whose preventive inoculations against cholera Asiatica called the medical world's attention anew to the grandeur of Spanish medicine. If Wigan could conjecture the duality of the mind from theoretical considerations and the general division of the brain into hemispheres, Brown-Séquard later, and at the time an American, proved it, and even my own feeble contribution on the "Duality of Action and Vicarious Functions of the Cerebral Lobes and Hemispheres,[2] in 1873, might count for something, even though it emanated from a lunatic asylum in the valley of the Mississippi. If Hitzig, a German, and Ferrier, an Englishman, demonstrated and located motor centers in the cerebrums of the lower animals, Bartholow, an American established by satisfactory physiological experiment their correspondence in the human brain.[3] If Victor Horsley and others first clinically applied the discovery of cerebral localization to surgical therapeutics for brain diseases, Professor William Fuller, a Canadian anatomist and surgeon, first trephined the skull in a case of idiocy, an operation which has recently been heralded from abroad as a new surgical procedure.

The author of this operation, now residing in this country, in Grand Rapids, Mich., is the designer from life of a series of brain sections and sectional casts, photographs and models, some of which I now show you, which have not been excelled in Europe.

Now that this operation of Dr. Fuller has come back to America with European approval as a European procedure, it is interesting to note the reception, a part at least, of the medical press of England, gave the novel surgical procedure at its inception on this continent.

The following extract from *The London Doctor*, a monthly review of British and foreign medical practice and literature, No. 1, Vol. 8, page 5, January 1, 1878, is appended as evidence that the case reported in this paper, received at the time a wide publication:

"Dr. Fuller of Montreal, has, says the *Canada Lancet*, conceived the novel idea of trephining out portions of the skull of an idiot child of two years old, so as to allow the expansion of the brain. The idea is certainly novel, so far as we know, no surgeon having previously ventured to remove portions of the skull cap so as to allow the brain to expand. We sincerely hope this brilliant (!) experiment will not be repeated. How does Dr. Fuller propose to protect the exposed portions of brain, should the brain protrude through the apertures he has made? According to latest advices, Dr. Fuller contemplates removing another piece. We hope not."

Under the name of linear craniotomy, this operation has recently found decided approval both at home and abroad. Engel speaks enthusiastically of it even for dementia epileptica.

If European surgery first exsects a stomach, or a kidney, or cuts down upon and removes a stone from the bladder or gall cyst, American surgery, represented in the person of Ephraim McDowell, with a temerity that startles the conservatism of Europe, first cuts into that surgical terra incognito, the abdominal cavity and saves an imperiled human life by successfully removing an abdominal tumor; a feat common enough now, alas, all too frequently performed by novices with the knife, lacking in mature surgical judgment. He and Battey, another American, led the way for the successful ovariotomies of Lawson Tait and his followers, and Marion-Sims God bless his gentle, precious memory, lays the foundation, by a peerless procedure on the female perineum, for the rescue of womanhood from untold misery. Marion-Sims, who, when asked to unsex a woman, in whom there was other possibility of salvation, could say to Weir Mitchell, "Let us give her a reprieve; I never unsex a woman without a pang;" and the woman got well as you and I know hundreds of others would, if permitted to do, without oöphorectomy. God bless Marion-Sims.

As we are justly appreciative of the part which American skill has performed in the world's surgical advancement; as the recalling of the names and deeds of our Motts, Brainards, Popes and Stones and Physics, Gross and Hodgens, gives us pleasure; if we revere our Rushs and Woods as England does her Hunters, Sydenhams and Gulls, so of our own American alienists and neurologists and their achievements, we are justly proud. The accomplished Isaac Ray and the gifted Amariah Brigham, Pliny Earle and Tyler, now no longer among us, and Van Dusen, the son of Michigan and a Kalamazoo asylum superintendent, whose essay on "Neurasthenia" preceded that of the classic work of Beard on "Nervous Exhaustion"—Beard who gave to the world a new disease, and gave it a new name, although the term "neurasthenia" was borrowed unknowingly from Van Dusen (*vide Alienist and Neurologist*, Vol. I, No. 4, 1880). Since these contributions appeared, the subject of nervous exhaustion has become too common in the literature of this country and Europe to need further mention here.

There are three works of Dr. Hammond which have had much influence on neurology and medicine generally, and these were accomplished during his service as surgeon general on the active list of the United States army:

1. The establishment of the Hospital for Injuries and Diseases of the Nervous System in Philadelphia, where the foundation of Dr. Weir Mitchell's most original work, "Wounds and Injuries of Nerves" was laid, Dr. Mitchell having been placed in charge by Surgeon General Hammond.

[2] American Journal of Insanity, Vol. XXXII, 1875.
[3] American Journal of the Medical Sciences.

2. The establishment of the Army Medical Museum in Washington.

3. The origination of the "Medical and Surgical History of the Rebellion."

These three things give our colleague just claim to distinction. I think the Hospital for Nervous Diseases was the first of its kind ever established in the world. Besides, our colleague wrote the first systematic" Treatise on Diseases of the Nervous System" in the English language, if not in any language.

If we look for discovery and classification of disease, America has not been entirely wanting. For a long time Beard's claim was controverted abroad; afterward neurasthenia was called "the American disease," then "American nervousness," till finally foreign writers recorded it among their people, even away off in far-off Russia, where Kowalewsky has written his classic book on the subject and given us due credit for our discovery. So in regard to Hammond's discovery of athetosis and mysophobia, and the coinage of these terms; and in regard to neurasthenia, I believe it is even now conceded that the original American claim[4] of general functional neurotrophia as the foundation of nervous exhaustion is universally admitted.

Seguin, in his clinical lectures in 1890, first suggested the substitution of a mixture of chloral and bromid for simple bromid, in the treatment of idiopathic epilepsy, when certain indications are present, chloral being indicated when the bromids alone produce undue stupor and extremely severe acne; also in cases where psychic disorder follows the stoppage of the bromids. This practice has now become general. He first attempted to subdivide the symptomology of "cerebral hyperemia" (of Hammond and others) into several new groups according to etiology, e. g., cases due to lithemia, to feeble or diseased heart, and (a large group) to eye strain, etc. He also attempted to give the distinguishing clinical signs (*N. Y. Med. Jour.*, Dec., 1892), between cases of cerebral paresthesia due to insufficiency of the interni, and those due to insufficiency of the externi, and recommended the use of nux vomica and strychnia for weakness of the interni and of belladonna, cannabis indica and other mydriatics for weakness of the externi. These drugs to be used as tests for diagnosis, and also for continuous treatment. He contributed by autopsies and clinical cases to confirm the doctrine of cortical localization of functions, in respect to the visual center (cuneus, in 1880, I think); the speech center (1868); and in subsequent years the facial, brachial and pedal, or crural, centers, and gave absolute postmortem evidence in support of the idea that such centers exist.

Besides Bartholow's communication, the whole subject of cerebral localization has received additional light from the contributions of our Charles K. Mills, of M. Allen Starr, Eskridge, Spitzka, myself and nearly every American neurologist, while the contributions of the latter to cerebral pathology, as those of Isaac Ott to cerebral physiology, have been justly acknowledged abroad.

Seguin and Hammond early advocated before any one else abroad, I think, the use of large doses of potassium iodid in syphilitic or non-syphilitic diseases of the nervous system, giving historical proof of its American origin (New York) and called it the "American method." Attempts have been lately made in Europe to ignore our great priority in this. Seguin says he learned it from Van Buren and Draper in 1865–7. I adopted this practice at the insane hospital at Fulton in 1867–8.

It falls to the lot of but very few men to discover a really important thing and to cause a great forward step to be made in medical science. Most of us must be content with helping the good work of adding new facts of secondary importance, and trying to apply scientific methods to the treatment of disease. I think that in this sphere of secondary scientific usefulness, American neurologists have made and are making good records.

The clinical relation of absent patellar reflex to locomotor ataxia, though first shown by Westphal and Erb, was extensively studied by Seguin, Gray, myself and others, and its relation to other diseases and the *possibility* of the knee-jerk being naturally nil in some persons was first shown in this country and acknowledged abroad,[5] so that the knee-jerk criteria of tabes dorsalis is a lost reflex, and an exaggerated jerk in lateral sclerosis and other states. I myself offered the first proof many years ago that it need not be present in apparently healthy individuals. One of those persons still lives and is free from any spinal or other nervous disease to this day. What is true as to elucidation of this reflex is equally true of the cremasteric and other reflexes, *vide* writings of Weir Mitchell and others. The bulbo-cavernous reflex and the virile reflex, practically the same thing, were discovered and clinically elucidated about the same time in Europe and America.

The value of the cremasteric reflex has been studied by Weir Mitchell with the same thoroughness of elucidation as that he has given to lesions of the peripheral nervous system generally; and Dr. John Ferguson of Toronto, Canada, has also thrown new light upon the patella reflex (*vide* "Remarks on Some Cases of Hemiplegia," *Alienist and Neurologist*, January, 1892). This subject has also lately been enriched in this country by Dr. F. X. Dercum, in a paper on "Optic Neuritis, Blindness and the Knee-Jerk in Cerebellar Disease," read before the American Neurological Society, July 25th.

The important subject of rheumatism affecting the nervous system was embodied in the recent address of Dr. Henry M. Lyman, before the American Neurological Association, and attention called to important clinical facts, especially affections of the sensory nervous system, not commonly recognized as associated with this disease.

The gastralgias, enteralgias, cutaneous irritations, sensitive feet and arthritic and cutaneous neuritides of rheumatism, have often attracted my attention, and have been to me an interesting clinical study, and much more is yet to be written on this important subject.

In the therapeutics of the nervous diseases, as well as in clinical description and pathology, to America belongs much credit for originality and efficiency of discovery and suggestion. Was it not in this country that the great Brown-Sèquard first conceived and promulgated his famous treatment for epilepsia, which has done more than all preceding or subsequent therapeutics suggested for the alleviation of this grave malady?

[4] Vide, Alienist and Neurologist, Vol. III, No. 3, 1882.

[5] "Diagnostic Significance of Absent Patellar Reflex."—Alienist and Neurologist, January, 1880; St. Louis Medical and Surgical Journal, February, 1879.

All the now acknowledged virtues of phytolacca decandra, or poke root, except the property of phytoline to reduce corpulency, were brought to my attention through the thesis of a student candidate for graduation of the St. Louis Medical College in 1859: and Dr. Bealle, a fellow-graduate with me that same year, from Texas, told in a thesis, which he entitled "Ups and Downs of a Texas Doctor," how he made a satisfactory flexible bougie out of green slippery elm bark, how he employed a smooth green wheat straw for a catheter and the crushed potato bug mixed with lard as a satisfactory vessicant in lieu of Spanish cantharides—practices which I imitated myself while doing a general country practice in Missouri in 1859 and '60, when I could do no better, and there is nothing much better for gentle dilation in certain surgical emergencies than a smooth slippery elm bougie. I could relate other instances of western American surgical genius in the use of therapeutic expedients in pressing emergencies of practice were they strictly germane to our subject.

I claim the credit myself of having first suggested and used in private practice chloral hydrate per rectum in the treatment of convulsive affections, a method based on the West Riding asylum practice in epilepsy, and used by me for arresting the convulsions of children and of the puerperal state.

Leonard Corning's method of local anæsthesia is original and we justly claim the discovery and therapeutic application of general anæsthesia as American, Sir James Y. Simpson, to the contrary notwithstanding. Copious ether douching for cephalo-spinal pain was practiced by myself thirty years ago. I was the first to employ capsicum, hot coffee and ammonia enemata to resuscitate from profound opium narcosis (*vide* Appendix), after failing with a battery. Kiernan was the next to follow the practice.

In the department of electrotherapy, especially in diseases of the nervous system, America stands well forward in therapeutic suggestion and resource. Beard and Rockwell and their followers in this country have done much in this line. It has been fully thirty years since I first employed the constant current for cerebral and other congestive states, not excepting ovaries and pelvis, and recommended it in gynecology, based on a prior recommendation of Legros and Onimus that it would reduce interpelvic sanguineous fluxes. It has been more than twenty years since I began the systematic employment of constant cephalic galvanizations for the cure of insomnia and the treatment of epilepsia, under the conviction that the prominent symptomatology of both of these affections were dependent upon disorder of vasomotor control, which cephalic galvanizations tend to restore as the bromids do. But I must not speak further of myself.

In this connection I may properly mention Dr. Henry M. Lyman's book on "Artificial Anæsthesia and Anæsthetics, Insomnia and other Disorders of Sleep," as a valuable American contribution to these subjects.

We have done no markedly original work in hypnotism, but have some imitators of Charcot and others, as Charcot and his followers have with professional applause followed Braid, the professionally tabooed Manchester follower of Mesmer, the mountebank original.

Cataphoresis in neurotherapy has been considerably advanced in America by Corning, Peterson and others, and likewise the hypodermic use of arsenic by Moyer; also the employment of antipyrine, acetanilide and other coal tar derivatives, by the last named and many others. (*Vide* Appendix.)

The therapeutics, as well as semiology, of insanity has been enriched by Jewell and Moyer in this country, by treatment directed to the colon. (*Vide* Appendix.)

Nitroglycerine, or glonoine, was first suggested to the regular profession in 1876 and '78, by Allen McLane Hamilton, before Murrell or others abroad had used it, for anemic cerebral states and cerebral arteriole spasm. It was on this recommendation and the recommendation of nitrite of amyl for a similar purpose, that I first employed the latter for the differential diagnosis of supposed hyperemic from anemic intracranial states. (*Vide* editorial in *Alienist and Neurologist*, October, 1880.)

A decidedly original and successful procedure in American surgical neurotherapy is that of pudic neurectomy as a remedy for masturbation, reported by Dr. J. S. Eastman in the *Medical News* of August 12th, of this year. The nerve being more sensitive on this side, Dr. Eastman cut down upon the left pudic nerve, which he found hypertrophied, and removed three inches of it. The patient gained weight and was freed from this vice, which had existed from the sixth to the twenty-sixth year. She had been previously sutured in the labia, cauterized, oöphorectomized and clitorectomized without benefit.

Veratrum viride, one of the very best remedies I know of for sthenic states of high cerebral and pulmonary congestion with full, bounding pulse and violent cardiac systole, is better than the lancet in high grade apoplexy and pneumonia, as it is fatal to apposite asthenic states of pulmonary inflammation and cerebral congestion, is a distinctly American remedy, and the practice of using it, as well as abusing its use, is of American origin. It may sometimes well substitute the bromids in certain phases of neurotherapy. I have so employed it. But we must not further dwell specially on American original contributions to neurotherapy. We could not complete the subject in the limits of an ordinary duodecimo volume, while another volume of equal size would not record the real practical progress and unequaled elegance of American pharmacy as applied to our therapeutics.

In the direction of neurological originality and advance, the work of our own distinguished Spanish-speaking secretary, Dr. M. G. Echeverria must not be overlooked. Though his modesty has prevented him from publicly claiming his due reward of merit, his claims have not been overlooked by foreign sources of appreciation.

His English publications, notably his great book on "Epilepsy," although scarcely noticed by American authors, are much and favorably quoted by neurologists in Germany, England and France. On their merit he was elected honorary member of the Medico-Psychological Society of Paris, and of Great Britain and Ireland; also vice-president to the first Congres International de Medecine Mentale, held in Paris in 1878, when he was called upon to preside on motion of the late Prof. Lesegue, after the sudden illness of Dr. Baillarger, chairman of the congress. So far as I know, Dr. Echeverria was the first physician in this country who, as "Professor of

Nervous and Mental Diseases," delivered didactic courses of lectures on this subject. This was in 1861, in the University Medical College of New York, while Seguin followed at the College of Physicians and Surgeons, in 1873. On his removal to New York from the National Hospital for the Paralyzed and Epileptic, in London, where he had occupied the position of resident assistant physician with Drs. Brown-Séquard and Ramskill as visiting physicians, he induced the Commissioners of Public Charities and Correction to establish the Hospital for Epileptics and Paralytics on Blackwell's island, New York, under his chief direction, and to found a school for idiots in Randall's island. Dr. E. Seguin, *père*, Drs. Kerlin and Wilmarth, of Elwyn, in their literary and practical works as revealed in the pages of the *Alienist and Neurologist*, *vide* Appendix, Dr. Brown of Barre, Mass., and the Wilburs have certainly done much creditable pioneer work with this class of defectives.

We may here remark, as facts of historical interest, that Dr. Echeverria was the first in America to perform, in 1865, assisted by Dr. J. H. Douglas, excision of a large portion (two inches) of the ulnar nerve at the elbow for the radical cure of epilepsy following upon traumatic injury. In 1869, in the presence of Prof. Boeck of Christiania, and other physicians and students, he removed at the hospital in Blackwell's island, the largest sanguineous clot (one and three-fourth inches long by three-fourths of an inch wide) ever extracted, to that time, from the base of the second parietal convolution of an epileptic lad, another operation lately originated abroad. The conical fibrinous clot was deeply imbedded in the cerebral substance, and the patient directly recovered his lost intellectual faculties upon the successful operation. The case is reported in his "Clinical and Anatomopathological Researches on Epilepsy," and in a subsequent paper published in Paris in 1878 (*Lesigue's Archives Generale*), with the records of five similar cases from Dr. Echeverria's own practice, and one hundred and forty, mostly by American and English surgeons. This paper was written mainly to show how unwarranted was the risk of this procedure then ascribed to it by French surgeons.

This distinguished neurologist, one of our colleagues, to-day, and those I have named before him, will not be overlooked when a candid world enumerates in history America's neurological benefactors.

Worthy of special mention with the foregoing is our indefatigable co-worker and colleague, Prof. Chas. K. Mills, whom the University of Pennsylvania has so lately honored with its chair of mental and medico-legal medicine. His recent studies in "Lesions of the Superior Temporal Convolution," accurately locating the auditory center, his presentation of the subject of aphasia and other affections of speech in their medico-legal relations, and lesions of the cauda equina, are real advances that must be universally acknowledged, as are likewise the complications of multiple neuritis and other papers, which we present in the appendix.

And now I name another star which shines in the neurological firmament of New York—a star emphatically spelled by his far-seeing parents with a double "r."

Among numerous recent contributions, besides his book on "Brain Surgery" (published by Wm. Wood & Co., New York), he has given us a special study of "Local Anæsthesia as a means of Diagnosis of Lesions of the Lower Spinal Cord" (*American Journal of Medical Science*, July, 1892); "The Cerebral Atrophies of Childhood, with Special Reference to Imbecility, Epilepsia and Paralysis" (*N. Y. Medical Record*, Jan., 1892); "Trephining for Hemorrhage of the Brain Producing Aphasia—Recovery" (*Brain*, 1892); "Hemi-Analgesia Alternans" (*N. Y. Med. Record*, Feb. 11, 1893), and has thrown some new light on the subject of "Syringo-myelia" (*vide American Journal of Medical Sciences*, May, 1888). His book, "Familiar Forms of Nervous Disease," is a credit to any country. Other bright neurological stars are shining, and many have shone longer, in the same scientific and humanitarian sky.

It is my impression that Ord's discovery of myxœdema received its first clinical confirmation in this country, and McLane Hamilton, I think, furnished five of the earliest clinical proofs of its verity as a distinct disease.

Hamilton first pointed out the neuro-genesis of certain meningeal inflammations, and I have maintained and do yet maintain that hemophilia is a vaso-motor neurosis.

The *Alienist and Neurologist* (April, 1884, *et seq.*), early maintained that oöphorectomy was too often performed, upon the mistaken assumption that the ovary originated nervous disease, whereas the reverse is the most common clinical fact. This is not only an original American claim, but it is now becoming a generally admitted fact both abroad and at home, and the latest and best articles on this subject are by Dr. Hamilton.

Another rising luminary of this field is Dr. Frederick Peterson, a reference to whose late contributions (*vide* the Appendix) will interest you and show some good spokes, at least, in the wheel of neurological progress. His recent papers on "Cataphoresis," his physiological experiments with magnetism at the Edison laboratory, and his joint papers with Sachs on "The Cerebral Palsies of Early Life" (*Jour. of Nervous and Mental Diseases*, May, 1890), and other papers to be found in Appendix, are all valuable.

But the stars of this firmament are too many to be counted. Should we dwell long enough to attempt it, we should not during our hour get round the circle. There remain Sachs, who has translated Maynert's "Psychiatry" for us; Bert Wilder, "The Brain Builder of Ithaca"; A. Jacobi, "The Universal Genius"; Corning, already mentioned, whose book on "Brain Exhaustion" is standard. There is also Dana, to whom we have already alluded, with Carter Gray, whose respective books are abreast of all neurological advance, and in every way creditable to American neurological science; besides E. N. Brill, Graeme M. Hammond, and Brown of the *Journal of Nervous and Mental Diseases*; also Ambrose L. Ranney and his standard textbooks on "Nervous Diseases and Neurological Anatomy," and Geo. I. Stevens with his Belgian Academy prize essays on the "Oculo-Neural Reflexes, and the Relation of Eye Strain to Nervous Diseases," whose first article on this subject appeared in the earlier numbers of my journal. Too many stars to classify and minutely describe, but they make a brilliant constellation.

If we look back to Philadelphia we discover another neurological star that has escaped our gaze, Wm. C.

Wood, whose treatise stands high, and yet another, Dr. A. H. P. Leuff, of neuro-anatomical fame, also Harrison Allen. There is Wormly, too, of Philadelphia, who is not altogether without the pale.

Far to the southward are Joseph Jones of New Orleans, and Buckley of the occidental metropolis.

And now, casting our eye to Baltimore, our vision falls on three luminaries, Miles, Osler and Hurd, whose light has not shone in vain; there also shine Conrod, Reed, Berkley, Welch and Halstead of Johns Hopkins hospital.

Skirting the sky northward we come to the Hartford constellation, Stearns and Crothers. The book of the former is devoted to practical psychiatry; the contributions of the latter to that important branch of psychiatry which, through Mason, Wright, Crothers and others has made such rapid forward strides in America, as well as in England, the study of inebriety.

The subject of alcoholic trance has been almost exclusively an American neurological study, and Dr. Crothers has contributed more than any other American, perhaps, to make it plain. In the Appendix appear further evidences of American advance in this direction:

"Law of Periodicity in Inebriety" (*vide Alienist and Neurologist*, July, 1892), showing a uniformity in the drink impulse and the laws which regulated it.

As our vision ranges further, Boston, with its neurological and psychological *savants*, comes into view —Philip Coombs Knapp and his book on "Intra-Cranial Tumors and Other Diagnoses;" Putnam, Channing, Webber, Folsom; John E. Tyler, the departed alienist of Sommerville, and Oliver Wendell Holmes, the poet sage and anatomical and psychological *savant* of Harvard. The subject of "Arterial Tension in Neurasthenia" received some new light from Boston in 1888 (*vide* article on the subject by Webber, *Boston Medical and Surgical Journal*, May 3, 1888); likewise the subject of "Lead Paralysis as it Affects the Brain" (*vide* same source, October 29, 1891); also the "Condition of the Blood in Certain Mental States" *vide idem*, March 24, 1892). The same journal for August 29, 1889, also contained some additional light on "Paramyoclonus Multiplex," and other peculiar forms of spasm, and in September of the same year, in same journal, page 277, this American writer throws additional light on the subject of "Cerebral Tumors and Their Treatment."

As we continue our survey of the neurological heavens, we come to the constellation Chicago, with such bright, particular, neurological stars as Lyman, with his book on "Practice;" Kiernan, the polygot; Moyer, the tireless; Paoli, Sanger, Brown, Brower, Clevenger, Lydston, and their books, and Church,—sadly remembering one bright luminary of these heavens now blotted out, whose light shone for a time upon our particular sky with effulgent luster—Dr. J. S. Jewell. He was a star of the first magnitude, a neurological Jewell of the first water, an indefatigable student, a painstaking observer, and a writer of the highest ability.

He blotted out his own bright life in the prime of his manhood by over zealous work in the cause he loved above his life. He founded and maintained while he lived the *Journal of Nervous and Mental Diseases*. And this reminds us that we should not omit most honorable mention, in this connection, of the name of Dr. Jewell's worthy and industrious coworker, Dr. H. M. Bannister, among the men of might in Chicago who have contributed to brighten her brilliant neurological sky.

Moyer has contributed a paper for the advancement of clinical neurology not already referred to: "Clonic Rhythmical Spasm of the Pronator Radii Teres" (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1887); "Periodically Recurring Oculo-motor Paralysis" (*The Medical Record*, 1887), being the first case described in this country; "Akinesia Algeria" (*Medical Standard*, 1893), being the sixth case reported, and the second in this country; and "A Rare Occupation Neurosis" (*Medical News*, 1893). By his works ye shall know him (*vide* Appendix for much more than we have here noted).

Within almost a suburban radius of Chicago is McBride of Milwaukee, and his "Review of Insanity and Nervous Diseases."

Modesty forbids my dwelling at length upon what St. Louis has done for the advancement of neurology. We may recover from our modesty sufficiently to appear in the printed Appendix; however, I might briefly intimate that both Dr. Bremer and myself have within the past few years added something to the literature of "Astasia-Abasia;" Fry to "Chorea;" Shaw to the subject of "Trephining for Brain Disease," and Bauduy to the "Study of Alcoholism and its Treatment." This is not all that we have done; but it were better that some one else, non-resident, should record and comment on our work, and I may say again, as I have said before (*vide* Appendix).

Now, if we continue our survey, we find the sky of neuriaty and psychiatry is not dimmed as we approach the region of the apparently setting sun. On the contrary, bright stars illuminate the western heavens. See how Eskridge shines:

He has contributed a valuable paper on "Nervo-Vascular Disturbances in Unacclimated Persons in Colorado" (*The Climatologist*, March, 1892); the important conclusion of which is for persons on going to the high altitudes of Colorado, especially for those who are nervous or who suffer from pulmonary trouble or cardiac weakness, to live comparatively quiet, until they become accustomed to their changed environments.

Likewise another on "Chorea in Relation to Climate, Especially the Climate of Colorado" (*Climatologist*, August, 1891). This study of the effect of the climate of Colorado on chorea shows but little, if any, modifying influence due to altitudes of 5,000 feet to 6,000 feet.

Another exceedingly valuable and advance contribution to the literature is "Retro-Anterograde Amnesia, with Report of Two Cases" (*Alienist and Neurologist*, July, 1892). This is an exceedingly interesting subject, both from a psychological and medico-legal point of view.

This is as far as we can go with Eskridge. But he has written much from his high standpoint in the Rocky mountains, and all is in the line of advanced neurology. (*Vide* Appendix.)

Next comes Howell T. Pershing of Denver, who records five cases of pre-ataxic tabes dorsalis with optic nerve atrophy in which there were marked atrophy of the optic nerves with little or no ataxia. He gives a statistical study of tabes, and shows that (as Walton and Gowers have recently claimed) the early occurrence of optic atrophy is in some way associated with an arrested development of the spinal symptoms.

This fact modifies the ordinary rules of diagnosis and prognosis.

He also records a case of Jacksonian epilepsy, with successful operation; no recurrence of the paroxysms more than a year after operation. Other articles by this writer are: "Language and Brain Disease" (*Popular Science Monthly*, October, 1892), and "Disseminated Sclerosis following Syphilis" (*International Clinics*, July, 1891).

But we cannot go farther in this manner. If we went hence south to the City of Mexico, thence across the gulf to New Orleans, thence north to St. Paul and crossed the continent to San Francisco, we should find working neurologists contributing their quota to the world's neurological and psychological progress.

As I am about to conclude, the proceedings of the July meeting of the American Neurological Association have just appeared in the weekly medical press, and here are its notes of American neurological progress:

Besides the President's Address and Dr. Dercum's paper, to which I have referred, Dr. Smith Baker's paper on "Heterogeneous Personality;" Matthew Field's on "Hospital Detention;" Frederick Peterson's on "Temperature in General Paralysis of the Insane;" Joseph Collins' on "Changes in the Spinal Cord in Old Cases of Infantile Paralysis;" G. M. Hammond's of "Progressive Muscular Atrophy;" C. L. Walton's "New Method of Reducing Dislocation of the Cervical Vertebræ;" Dana's "Acromegaly, Gigantism and Facial Hemi-hypertrophy;" J. J. Putnam's "Thyroidectomy in the Treatment of Graves' Disease;" B Sachs' "Tabes and Syphilis;" Kraus' "New Pedodynamometer;" Drs. Lloyd's and Reisman's joint communication on "Infectious Endocarditis with General Septicemia and Multiple Neuritis;" C. L. Walton's "Tumor of the Angular Gyrus;" Dr. E. D. Fisher's "Autopsy and Report of Congenital Cerebral Hemiplegia;" C. K. Mills' "Lesion of the Thalamus and Internal Capsule;" Wharton Sinkler's "Tumor of the Optic Thalamus;" Geo. J. Preston's paper on the "Localizing Value of Aphasia;" Leonard Weber's on "Neurasthenia;" Kraus' "Case of Myxœdema, with Observations;" Philip Coombs Knapp's "Simulation in Traumatic Nervous Diseases;" and "The Microbic Origin of Chorea," by Dr. C. L. Dana, are all instructive, suggestive and progressive in our department. The proceedings of this favorite American society are becoming every year more and more valuable. They are indispensable to neurological advance. The neurological world would not march on to its manifest destiny to rule paramount in the world's medical thought without the original work of this great American society of distinguished neurologists.

There were also papers read only by title before this body, the names of whose authors are also adequate warrantee of worth. Among them—"The Genesis of Hallucination and Illusion," by H. A. Tomlinson of St. Peter, Minn.; "The Diagnosis of General Paresis," by L. C. Gray of New York; "Two Cases of Friedreich's Disease," by F. R. Fry of St. Louis; "The Metapore or Foramen of Majendie in Man and in the Orang-Outang," by Bert G. Wilder; "The Relations of Chorea to Rheumatism," by C. Eugene Riggs of St. Paul; "Experiences in the Use of Testiculine and Cerebrine," by J. J. Putnam of Boston; "Paralysis after Surgical Operations," by V. P. Gibney of New York; "Traumatic Brachial Plexus Paralysis in Infants," by Wm. Leszynsky of New York.

If I should go on enumerating the work, present and recent, of American neurologists, it would develop acute cerebrasthenia. It would make you tired.

I had almost forgotten to note the contributions of our hospitals for the insane to the pathology of mental diseases. I cannot now go entirely over this vast subject. Besides what has been done at Utica, N. Y., and Middletown, Conn., with which you are familiar through the *Journal of Insanity*, you may not know that it has for a long time been the custom of Dr. J. W. Blackburn, the eminent pathologist of the Government Hospital for Insane, at Washington, to each year select a number of cases for special study as a pathological supplement to the annual reports of the Government Hospital for Insane. This and the making of nearly one hundred post-mortem examinations yearly, constitutes the work of this hospital, to which I also invite your attention in the Appendix.

You see, America breeds and develops neurologists as the water breeds and develops fishes. The pabulum neurology feeds on is in the American people—their hustling, rushing habits, their business, professional, social and political environment, and the numerous newspapers they read every morning before breakfast and every night before they forget to say their prayers—this moral, political, social and business atmosphere of ambition and bustle, tends to develop the strongly endowed, neurologically and psychologically, as it tends in the weakly endowed to the development of neuropathic conditions. It develops neurologists and psychologists to care for the neuropaths. It builds and it breaks the nervous system. It can not yet be said that we are a neuropathic people, though we are tending that way; but neurology is advancing with equal pace with neuropathic break-down, and will, it is hoped, ultimately enlighten and save the people from their neuropathic sins.

ADDRESS.

BY E. FLETCHER INGALS, A.M., M.D.
CHICAGO.
EXECUTIVE PRESIDENT OF THE LARYNGOLOGICAL SECTION.

Gentlemen and Colleagues:—In calling to order the Laryngological Section of the Pan-American Congress, I take the opportunity to congratulate you upon the number and excellence of the papers which have been secured for your consideration.

I feel that there is a special reason for felicitation upon the propitious circumstances under which we have convened, because of our success in spite of many obstacles.

The laryngologists of this country as well as those who would have visited us from abroad, have been called upon for more than the usual amount of work during the past few months. Early in May the American Laryngological Association met in New York and was largely participated in by those who otherwise would have been free to aid us. Shortly afterward the American Climatological Association met in Philadelphia, taxing the energy and taking the time of many of the laryngologists of this country. Only three weeks subsequently the American

Medical Association met in Milwaukee, with a large attendance upon the Laryngological Section. In addition to these, the various State Medical Societies called out a considerable number of papers upon diseases of the throat and nose. Besides this, many of the laryngologists who contemplate going abroad have undertaken to prepare papers for the International Medical Congress which was to have met in Rome shortly after the close of this Congress.

When the American Laryngological Association held its first meeting in 1879 there were, all told, less than thirty men in the United States sufficiently interested in the subject to be counted laryngologists. But the ranks have been added to rapidly year by year, until now there are probably not less than four times that number who are well equipped; and in all of the cities and larger towns throughout the country are others more or less qualified who are doing considerable work in this special line, and it is probable that to-day 500 men could be found in the United States who might present something of interest to this body, though I have been able to discover only about 200 of them.

Nearly a year ago I opened correspondence with the physicians of Central and South America and of the West Indies, hoping to get them to join us in this Congress, but I regret to say that in only a few instances have I been able to obtain replies to my letters, and that only two or three of our colleagues in those countries have promised papers for this occasion. Considering the limited intercourse which has always existed between the United States and the Latin Americas, this is not a matter of surprise, but it is hoped that this Congress will be a beginning of closer alliance and personal friendships which will in coming years bring us often together, and build up a powerful International Congress in this western hemisphere.

The railroad already projected through Central America which will connect with various railroad systems in South America, and increased means of communication by sea will, it is believed, ere long open up to physicians of the United States many new and valuable resorts whose climatic influences may be made subservient to our patients in their search for health. When this has been brought about it is obvious that our acquaintance with the physicians in these southern climes will be of the greatest advantage to our patrons.

We welcome you, one and all, to our National Capital. We ask of each, your hearty coöperation in the work before us, and we believe the final results will justify the large amount of labor and anxiety which have been expended in this undertaking.

ADDRESS OF THE EXECUTIVE PRESIDENT. SECTION ON GENERAL SURGERY.

BY JOHN B. HAMILTON, M.D., LL.D.
CHICAGO.

Colleagues:—For the first time in the history of the American continent, the medical men of the Americas meet in convention, for the purposes of scientific advancement and the cultivation of closer professional relationship.

The country of WASHINGTON, the land of BOLIVAR, and the sunny islands of the southern seas, have sent their representatives to this capital of their oldest republic, to exchange courtesies, and set forth a fair statement of their degree of enlightenment in the various branches of medical knowledge.

Our statesmen have long desired this close union between the American republics, and the medical profession, now as ever, stand ready as citizens to carry out their share of this patriotic duty. After our own civil war, the medical profession, through the American Medical Association, met in annual reunion at Atlanta; and it should always be a matter of professional pride that our own led the van in this march of professional and social reunion. Here again we are inaugurating the first of what we hope may be the beginning of a series of Pan-American professional congresses, each more interesting than its predecessor, and all serving to unite our glorious lands in common aims and mutual regards.

As the United States has had the honor of proposing the Congress, the burden of organization has fallen largely upon its representatives, and the overflowing program is to-day evidence of the faithfulness with which our President, our Secretary General and their coadjutors have performed their task.

We welcome you, dear colleagues, to a rare treat in the republic of letters; our foremost medical men will address you, and the topics they bring for your consideration have living interest, for they are topics of to-day.

A glance at our program shows that our own Section, notwithstanding the subdivisions by which many branches of surgery have been organized into separate Sections, is ample to fully occupy the time set apart for our deliberations.

The rapid evolution of surgical knowledge is one of the wonders of this remarkable age, and surgeons may fairly claim that their own branch of medicine has kept equal pace with the stupendous advances made by the collateral sciences. A review of the surgical progress of the last decade, alone, constitutes one of the most brilliant pages of the history of medicine. And yet one must remember that all scientific progress is based on antecedent fundamental facts, discovered by slow, laborious and painful steps.

The labors of Darwin, Huxley, Herbert Spencer, Pasteur and Lister, in the last decade, have made possible the practical successes in the present decade.

There is at this time no diseased organ or tissue of the body that escapes the remedial scalpel, and an examination of the discussions of this time shows that the questions presented are rather those of method, than those of original discovery. We no longer question the propriety of surgical interference, in hitherto dark portions of human anatomy, but we are concerned in the technique of that interference; and to the improvement of surgical technique the ablest minds of the present decade have been directed.

The subject of surgical bacteriology, which includes the chemical study of microbic products, has still much to disclose, but we already base our practice on the immortal discovery of Pasteur. The success of modern surgical treatment, even with the imperfect knowledge of the bacteria that we now possess, is such that no surgeon thinks for a moment of comparing the results of any given operation with those obtained in the pre-microbic epoch. This comparison, however, only relates to the age of gunpowder, for history tells us with abundant detail, that the ancient treatment of wounds corresponded very closely with our own. The vulnerary com-

pounds of the ancients were largely composed of what we now know as antiseptics; the terebinthinate and metallic dressings of the Alexandrian period we can accept to day as true anti-bacillary agents; and even the boiling oil and the red hot iron, we could now admit as forming an eschar, or impermeable wall against the entrance of microbes. It was aseptic surgery of which the ancients knew nothing. The empirical results of the boiling oil, of the actual cautery, were enough for the ancient masters; like the heroes of Balaklava:

"Theirs not to reason why;"

they only knew results were satisfactory, wounds healed quickly and without sepsis; what matter if the theory on which their treatment was based—that of arrest of hemorrhage—was faulty, the result satisfied them. Like the blind man of the New Testament the logic was simple: "Whereas I *was* blind, *now* I see;" therefore the touch was adequate. All medical science seems to have run in cycles, and there was less medical superstition in the Alexandrian period, than in medieval medicine—less in the Hindoo charaka than in the pages of Guy de Chauliac or Ambroise Paré. Bacteriology has added much to our knowledge of tuberculosis, and given more precision to its treatment, but that knowledge is still imperfect, and its treatment far from satisfactory. Much less has bacteriology added to our knowledge of the carcinomata, which still remain one of the mysteries of medicine. We have for years studied the varying departures of tissues from the normal to the abnormal type, and bacteriologists have in vain sought to connect the atypical structure of carcinoma with some bacterial development, but no Pasteur or Harvey has yet dawned upon our horizon to pick the lock of a mystery to which Heaven seems to have allowed our generation no key. Looking to the future we can not doubt that the solution of the formation of the carcinomata will yet be discovered, but it will necessarily be through the influence of some now totally unknown factor. The study of embryology and atavism seems at present the most probable avenue to the truth.

What may we hope for the future of surgery?

It seems likely at this day that improvements in technique will continue to occupy the surgical mind until some epoch-making discovery in physiology shall have been made. It is not likely that the present generation of surgeons will witness another discovery as far reaching as that of Pasteur. We must digest and fully assimilate the discoveries of the bacteriological epoch; that process will probably fully occupy our time and that of our immediate successors. It is true that we may have some help from advances in the collateral sciences; transillumination of the body for example, may be yet fully developed in our time, instruments of precision as aids to hearing and vision may greatly assist us in making our present knowledge useful, but the great outlets to human life such as carcinoma, in all probability will have their genesis understood only by the surgeons yet unborn. When that time shall come, carcinoma and tuberculosis will be classed among the preventable diseases. These two affections have cost more human lives annually than cholera or yellow fever, and yet no government has ever set on foot any systematic and regular inquiry into their causation or propagation. It is true that the study of cattle tuberculosis has been the subject of much study by the Bureau of Animal Industry, but so far as the human race is concerned little has been done in the direction indicated.

Colleagues! I feel that I have too long detained you with these speculations, when we have before us a program so rich and so varied, but I can not refrain from expressing my heartfelt congratulations on the success of this meeting, my thanks for your generous response to the call for papers, and as an American surgeon to bid you welcome. Welcome, thrice welcome, foreign colleagues, to our hearts and homes. We pray you to kindly join us in warmest fraternal greetings to our European guests, and let us remember the saying of Livy that true friendships are immortal.

NECROLOGY.

Dr. Clinton Armstrong of Carrollton, Ill., died at Eureka Springs, Ark., August 23, aged 70. He was surgeon of the 61st Ill. Vols. and for many years a member of the Illinois State Medical Society and of this Association.

Dr. John F. Higgins of Port Jervis, N. Y., died at the German hospital in that city, Aug. 20, as the result of an accident received Aug. 16. He was a graduate of Bellevue Hospital Medical College class of 1879.

Dr. Augustus H. Salisbury of Minneapolis, died in that city, Aug. 26. He was a native of Canandaigua, N. Y., and 53 years of age. He was the first health commissioner of Minneapolis and had practiced there since 1874.

Dr. Edgar G. Young died Aug. 17 at his new home in San Diego, Cal. He had been ill with a complication of lung and heart troubles. He was 47 years of age and leaves a widow.

Dr. D. A. Pancake died at Columbus, O., Aug. 28. Dr. Pancake was on his way to Columbus, but was taken sick in Cincinnati.

Dr. Henry H. Darst of Toledo, O., died in that city Aug. 25, aged 72 years.

Dr. Woodville S. Bates of St. Louis, died at Badenweiler, Germany, August 2.

A Hospital with a Single Bed.—This caption is not intended to apply to the average sickroom, but rather to indicate the modest beginnings of a missionary plant in a benighted section of Asia, at the city of Patna. Dr. Grace Mackinnon, in January rented a little mudhouse on the bazaar, and thither sent a patient from the city dispensary whose treatment was impracticable at the patient's own home. Since that time one patient has succeeded another until a series of ten has been under treatment. Other patients take up a temporary abode in some house near the gates of the dispensary, in order to enable the lady physicians to economize their time and steps. "It is the day of small things, but we are very far from despising our hospital with its one bed; far from it; we take great pleasure in it, and we have come to know some of the patients really well by its means."

Blank applications for membership in the ASSOCIATION, at the JOURNAL office.

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This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues and subscription for THE JOURNAL. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, SEPTEMBER 9, 1893.

THE PAN-AMERICAN MEDICAL CONGRESS.

We publish this week the address of President PEPPER, the address of Surgeon General STERNBERG on Military Surgery, the address of Professor WARREN, Executive President of the Section on Pedagogics; the address of Professor HUGHES, Executive President of the Section on Neurology, and the opening remarks of Professors INGALS and HAMILTON, Executive Presidents respectively of the Sections of Laryngology and General Surgery.

A careful perusal of these addresses will show that, with scarcely an exception, the authors have taken a broader view of the scope of the Congress than a mere professional one.

The Congress is looked upon as the initial step towards cementing the grand brotherhood of American States into commercial and professional union. Political union may not be desirable, but commercial and professional unity of action will develop the Americas as nothing else could develop them. The republican idea, too, will gain new strength throughout the world, as an indirect effect of these periodical exhibitions of power.

CHOLERA.

The latest advices from Europe show that there is not much change in the cholera situation in Russia, but that the previous ratio of increase is maintained.

In Hungary and Galicia the disease is increasing. It is admitted that in Hungary three hundred communes are infected. In Galicia fifteen districts have been invaded and the disease is still spreading.

On the 1st inst., in Obecoe, in Hungary, there was a cholera riot owing to the removal of the corpse of a cholera patient.

The ignorance and superstition of the people prove a serious obstacle in the way of the authorities in the enforcement of proper sanitary precautions, leading inevitably to the spread of the contagion. This is to be observed in Persia as well as in Hungary. There is no increase in Vienna.

The disease has broken out among the Jeddah pilgrims on the island lying off the city of Mogador in Morocco, as anticipated. We have not yet reliable returns of the instances in which these returning pilgrims have developed the disease or the places to which they have carried it. It is evident, however, that it is no longer confined to the northern shores of the Mediterranean, but is spreading on the southern seacoast as well.

In Italy, Genoa has been reached. New cases have appeared in Alessandria, and several other new points have been reported, but the disease does not seem to be spreading to any great extent. The number of cases has been greater at Palermo than at any other point.

In France, deaths have occurred at Nantes, one of the victims being a physician who had treated cases in hospitals.

New points are constantly infected in Germany, Holland and Belgium, but the authorities are keeping the disease under control wherever it appears. Another death has taken place at Hull. The port of Grimsby in Lincolnshire, has been declared to be infected with cholera, and traffic between it and other British ports has been prohibited. What has become of their *no quarantine* system in England? During August eighty deaths occurred from what was called choleraic disease. It is now believed that many of these were due to cholera. Why was not the character of the disease discovered before? This was to be expected, inasmuch as emigrants from the continent pass through Grimsby in considerable numbers en route for the United States, by way of Liverpool. A number of cases have also been found in Jersey City, the origin of which has not yet been satisfactorily traced. Every effort is being made to prevent the spread of the disease from that point.

PHYSICIANS CAN HAVE BUT ONE SATISFACTION.

Physicians can have but one satisfaction of their bills. An important illustration of this principle, suggestive of a wide application for it, occurs in the case of WOOD v. MUNSON, decided by the Supreme Court of New York, July 8, 1893, (just reported, 24 N. Y. Supp. 286). Here a physician and health officer of a town attempted, by way of counter claim, in a suit brought against him, to collect the balance of his charge for attending a family through an epidemic after a portion of his bill had been allowed by the town. The court, however, said that the physician having presented his bill to the auditors of the town was evidence, as against him, that he was employed by the town to attend the family in question. The fact that the auditors allowed a portion of his charge was also evidence to show such employment.

They would have no right to make him a present or to make him any allowance on account of such services unless a legal charge against the town. The presentation, audit, and acceptance of what was allowed him, extinguished his claim. When he voluntarily presented his bill as a claim against the town, the audit of the town board was a legal adjudication of the amount due thereon. Moreover, if there were any liability on the part of the person whose family was attended, as well as the town, for such attendance, which the physician might have properly claimed, his presentation of a bill to the town, and acceptance of the amount at which it was audited, must have had the effect of also extinguishing the claim as against such person. Where a debt owed by two joint and several debtors, is satisfied by either, nothing remains for either to pay. If the debt is once satisfied, to allow recovery again, even if against another person, would be to allow a satisfaction twice upon one debt. So when the physician above mentioned presented his claim to the town auditors as against the town, and accepted the sum that they allowed thereon in payment, the transaction extinguished his claim against the head of the family attended, if any such claim ever existed.

THE NEW PHARMACOPŒIA.

A new revision of the Pharmacopœia has just been placed upon our table. We will give it careful review as soon as practicable. At a hasty glance the publication shows that many changes have been made; a great many drugs have been dropped from the former list and many new preparations added. It has been revised with more care than any previous edition, and gives evidence of high scholarship and a thorough understanding of the necessities of the profession. The last revision of the Pharmacopœia prepared the way for the decimal system of weights and measures by providing that medicinal preparations should be composed of parts by weight. In this edition, the decimal or metric system is employed in the compounding of preparations throughout without qualification or translation. This change must be approved by all who appreciate simplicity in our system of weights and measures, and we predict that by the time the next revision shall take place the medical profession will have generally adopted the decimal form in prescription writing. The form is so easy and simple when compared with the complicated system of grains, scruples, drachms and ounces, as to make it a matter of wonder that the decimal system should have so much difficulty in the way of its adoption.

When it shall have become generally used it will be as impossible to return to the present English system as it would be for our bankers and business men, generally, to return to the English monetary system and account for financial transactions in pounds, shillings and pence. To be sure, there will be some difficulty in the minds of those long accustomed to a certain method, whatever that method may have been, but the medical profession, ever progressive, will soon adapt itself to the changes made necessary by the advances of science. We sincerely hope that no misguided person will publish sets of complicated rules for the conversion of the English system into metric doses, for the reason that it is not rules for conversion that are now needed. The prescriber should learn the dose of his preparation or drug according to the decimal doses; then when a single dose shall have been learned it is only necessary to multiply the units of that dose by the number of doses he wishes to administer. Complicated rules for conversion have long stood in the way of the practical adoption of the decimal system. Let us have dose tables in convenient form for immediate reference, that can be carried as a memorandum in the pocket and a moment's reference, then, will refresh the mind as to the exact dose and there need be no danger of making mistakes.

The American Metrical Bureau of Boston long ago published dose tables, with statements according with the foregoing remarks, but as time has gone on they have passed out of the minds of many and it is again necessary to bring them into view. The American medical gentlemen of the future will be astonished to find that more than a quarter of a century was required to effect the change from an arbitrary to a decimal system of doses after a hundred years of trial of the same system in the coinage of the country.

In our review columns we will again refer to some of the more prominent features of the Pharmacopœia.

SOCIETY NEWS.

Mississippi Valley Medical Association meets October 4, 5 and 6, 1893, at Indianapolis. R. Stansbury Sutton, M.D., president, Pittsburg; F. C. Woodburn, M.D., secretary, Indianapolis; A. M. Owen, M.D., treasurer, Evansville, Ind.; G. J. Cook, M.D., chairman committee of arrangements, Indianapolis.

PROVISIONAL PROGRAM.

Allen, S. E., Cincinnati. Paper.

Aulde, John, Philadelphia, Pa., "Cellular Therapy; its practical adaptation in the rational Treatment of Disease."

Banker, A. J., Columbus, Ind., "Some Practical Points in the Treatment of Abscesses and Tuberculous Glands."

Barr, A. B., Calimine, Ark., "The Physiology of Conception."

Bauer, Joseph L., St. Louis, "The Treatment of Hip Joint Disease as related to its Etiology."

Bauer, Louis, St. Louis, "Incurability of advanced and extreme Cases of Talipes Equino-varus by the Methods and Means in Vogue at the present Time. Suggestions of a Way to remove the Deformity, without disturbing the Usefulness of the Extremity."

Berghoff, J. T., St. Joseph, Mo., "Treatment of Fractures of the Leg."

Bishop, Seth S., Chicago, "Treatment of Mastoid Disease, with Operations."

"Bloom, N., Louisville, "Electrolysis in the Removal of superfluous Hairs."

Brayton, A. W., Indianapolis, "Presentation of Cases of Skin Diseases—*a*, Sarcoma of the Face, with Sections; *b*, Lupus Deformans; *c*, Xeroderma Pigmentosum."

Carpenter, J. G., Stanford, Ky., "Strictures of large Caliber; Follicular Urethritis; Urinary Infiltration; Abscess; Two Cases; Recovery."

Cartledge, A. Morgan, Louisville, "Shall we Operate in all Cases of Appendicitis?"

Cheatham, Wm., Louisville, "Medical Ophthalmoscopy."

Comegys, C. G., Cincinnati, "Medical Jurisprudence."

Corlett, Wm. T., Cleveland, O., "Pemphigus; its Varieties, Cause and Treatment, with a Report of some unusual Cases."

Crothers, T. D., Hartford, Conn., "The Medical Treatment of Inebriety."

Cox, N. D., Spencer, Ind. Paper.

Culbertson, J. C., Cincinnati, "Diphtheria."

Cutter, Ephraim, New York, "The Treatment of Sclerosis of the Spine."

Davis, Wm. H., Denver, Col. Paper.

Dewees, Wm. B., Salina, Kan., "The Erect Posture for Gynecological Examinations."

Devilbiss, Allen, Toledo, O., "New Devices for Cutting Bone."

Dixon, Arch., Henderson, Ky. Paper.

Dunning, L. H., Indianapolis. Paper.

Eichburg, Joseph, Cincinnati, "Essential Paroxysmal Tachycardia."

Everts, Orpheus, College Hill, O., "Problems of Public Interest concerning the Insane."

Galloway, Wm. A., Xenia, O., "Diphtheria; a Treatment giving a low Death Rate in Hospital and Private Practice."

Gibbes, Henneage, Ann Arbor, "The History of a Case of Phthisis Treated with Gold and Iodin, and where Inoculations of Guinea Pigs with the Sputum was kept up until it became Innocuous."

Hall, Rufus, Cincinnati. Paper.

Hayes, D. J., Milwaukee, "Some Points on the Surgery of the Prostate."

Heath, F. C., Indianapolis, "Hygiene of the Eye."

Hibberd, Jas. F., Richmond, Ind., "Address on General Medicine."

Hodges, Fred. Jenner, Anderson, Ind., "Continuous Submersion in Infected Wounds of the Extremities."

Holmes, Bayard, Chicago, Paper.

Humiston, Wm. H., Cleveland, "The Treatment of the Diseases of the Uterine Appendages."

Hutchinson, Wm. F., Providence, R. I., "Electrical Anæsthesia; further Studies."

Kieper, G. F., Lafayette, Ind., "Etiology of Deafness and its Prevention."

Kellogg, J. H., Battle Creek, Mich., "A Critical Study of the Symptomatology of the Disorders of Digestion."

Kemper, G. W. H., Muncie, Ind., "A Case of Senile Gangrene Treated by Amputation."

Lamphear, Emory, Kansas City, "Surgery of the Cranium; what is the proper Treatment?"

Lash, H. M., Indianapolis, "Chorea; its Etiology and Treatment."

Lewis, Bransford, St. Louis, "The Pathological Anatomy of Urinary Retention, with Deduction as to Treatment."

Link, Wm. H., Petersburgh, Ind., "The Value of a Close Observation of other Men's Work."

Loeb, H. W., St. Louis, "Some Illustrative Cases of Nasal Headache."

Love, I. N., St. Louis, "Chorea in its Relation to Rheumatism."

Lydston, G. Frank, Chicago, "Some Heresies regarding Prostatic Pathology."

McFarland, Anne H., Jacksonville, Ill., "The Classification of the Insane."

McGraw, Theo. A., Detroit. Paper.

McGahan, Chas. F, Bethlehem, N. H., "Physical Culture in Pulmonary Disease."

McMurtry, L. S., Louisville. Paper.

Marcy, H. O., Boston, "Address on Surgery—The Anatomy and Surgical Treatment of Inguinal Hernia in the Male."

Mathews, Joseph M., Louisville, "Ulceration of the Rectum; its Etiological Treatment."

Meachem, J. G., Racine, Wis., "Lung Diseases as they occur on the Shores of Lake Michigan."

Moulder, J. McLean, Kokomo, Ind., "Brain Surgery, with Report of Cases."

Mitchell, Giles S., Cincinnati. Paper.

Murphy, J. B., Chicago, "Perforative Peritonitis."

Norbury, Frank P., Jacksonville, Ill., "Medico-Legal Aspects of Brain Tumors."

Ohmann-Dumesnil, A. H., St. Louis, "Chancroid of the Eyelid."

Oliver, J. C., Cincinnati, "Tubercular Disease of the Tarsus; Surgical Treatment; Results.

Page, L. F., Indianapolis, "Hay Fever."

Pantzer, H. O., Indianapolis, "The Pathology and Principles of Treatment of Asthma."

Price, Joseph, Philadelphia, "Why Gynecology and Obstetrics should be in the Hands of Specialists."

Quimby, I. N., Jersey City, N. J., "A New Method of Operating at the Ankle Joint for Injuries of the Foot."

Ravogli, A., Cincinnati, "Cutaneous Psorospermosis."

Reamy, Thad. A., Cincinnati, "Evolution in the Treatment of Uterine Fibroids since My Entrance into the Profession."

Ray, J. M., Louisville, "The Nose and Naso-Pharynx in their Relation to Suppurative Diseases of the Middle Ear."

Ricketts, B. Merrill, Cincinnati, "Report of Surgical Cases with Photographs."

"Ridlon, John, Chicago, "Differential Diagnosis and Principles of Treatment of Hip Joint Disease."

Sattler, Eric E., Cincinnati. Paper.

Sexton, J. C., Rushville, Ind., "Study of a Fatal Case of Essential Tachycardia."

Scott, M. T., Lexington, Ky., "Septic Infection of the Newborn."

Stearne, Albert E., Indianapolis. Paper.

Stewart, F. E., Watkins, N. Y., "Some of the Treatments Employed in Sanitariums."

Stemen, C. B., Fort Wayne, Ind., "Antiseptic Precautions in Railway Injuries."

Straus, Leon, St. Louis, "A Plea for more Frequent and Earlier Colotomy in Painful Malignant Diseases of the Rectum."

Sutton, R. Stansbury, Pittsburgh, "President's Address."

Thornbury, Frank J., Buffalo, N. Y., "The Bacteria of the Surface; Disinfection of the Latter; Non-Utility of Antiseptics."

Thorner, Max, Cincinnati, "Modern Methods of Treating Ear Diseases."

Todd, Lyman Beecher, Lexington, Ky., "Certain Diseases of Infancy; their Prevention."

Vernon, Geo. W., Indianapolis, "Infantile Therapeutics."

Von Klein, Carl H., Cleveland, "Nasal and Post-Nasal Vegetations."

Von Ruck, Karl, Asheville, N. C. Paper.

Walker, H. O., Detroit, Mich., "Kraske's Operation, with Report of Cases."

Walker, Edwin, Evansville, Ind., "Reflex Irritation as a Cause of Disease."

Werder, X. O., Pittsburgh, "The Present Status of the Treatment of Uterine Fibroids."

Webster, Geo. W., Chicago. Paper.

Wirt, Wm. E., Cleveland, "Treatment of Old and Neglected Cases of Hip Disease."

Wishard, Wm. N., Indianapolis. Paper.

Wood, E. A., Pittsburgh, "Therapy of Gold."

DOMESTIC CORRESPONDENCE.

Staff Correspondence of The Journal.

JOURNAL TRAIN, C. & O. R. R., Sept. 3, 1893.

The JOURNAL train left Central depot on time at 8:30 and traveled through the country without incident until nearing Indianapolis, where it was delayed an hour and a half by a wrecked freight train. The train service was excellent and the doctors, although delayed, preserved their equanimity and arrived in Cincinnati in good order. The St. Louis contingent were delayed for some reason or other and did not unite with the train at Indianapolis as was expected. The following named gentlemen among others were on the train:

Mr. Ernest Hart, editor *British Medical Journal*, and Mrs. Hart; Dr. Daniel R. Brower, Chicago; Dr. J. R. Wolfe (Prof. Ophthal., Glasgow); Dr. J. W. McLaughlin, Dr. E. H. Root,

Dr. A. M. Bromworth, Dr. C. M. Hobby, Iowa City; Dr. Bayard Holmes, Dr. E. F. Ingals, Dr. R. C. Corr, Carlinville, Ill.; Dr. S. H. Stevenson, Dr. S. S. Bishop and Mrs. Bishop, Dr. Geo. H. Cleveland, Dr. F. C. Green, Dr. W. Y. Dougall, Joliet, Ill.; Dr. P. C. Coleman, Colodo, Texas; Dr. James M. Craighill, Baltimore; W. J. Williams, Odell, Ia.; J. W. C. Love, City of Mexico; the editor of the JOURNAL and Mrs. Hamilton. Mrs. Holland, the stenographer of the Chicago Medical Society, was also of the party.

At Indianapolis the party were called upon by Dr. Woodburn and others who wore badges showing that they were on the Reception committee of the Grand Army of the Republic, which meets in Indianapolis this week. The city of Indianapolis was gaily decorated with flags, and presented the appearance of a place about to have a great fair or public entertainment. We were told that 200,000 strangers were already in Indianapolis attending the Grand Army encampment.

Prof. Weismann's Theories.

A late thoughtful editorial in THE JOURNAL on "Studies of Heredity," commenting on Dr. Weismann's published essays on this subject, seems to endorse the German professor's doctrines as the latest accepted conclusions of science. No mention is made of the widespread criticisms which Weismann's theories have called forth, the most notable of which perhaps are from the pen of Herbert Spencer in the *Contemporary Review*. After expressing surprise at the wide acceptance of Prof. Weismann's theories by the biological world, Mr. Spencer proceeds to show that the most fundamental proposition in his "Essays"—that on which the whole superstructure of his biological arguments rest—is untenable.

Prof. Weismann's primary contention is that animal organisms consist essentially of two kinds of ultimate cells—the somatic or nutritive cells and the reproductive germ cells; that the former are perishable but that the latter are immortal; that is, that in the propagation of the species from generation to generation, the reproductive cell is transmitted as such, retaining its distinctive nature in contrast with the somatic cell which varies according to the nutritive functions performed by it, and finally perishes when nutrition ceases. In a summary way and with masterly skill, Mr. Spencer entirely demolishes this theory. He proves conclusively that in important divisions of the animal kingdom, the alleged reproductive cell is wholly dispensed with for many generations together. Therefore, the transmission of hereditary qualities can not reside in the substance of these germ cells. Even in vertebrates, Weismann admits that the distinction between the two kinds of cells is not evident until the embryo is completely formed. Only nutritive cells during this period can be shown to exist. But the impress of heredity marks this period as plainly as any later stage in the development of the organism. Hence, Weismann's assumption becomes pure supposition.

The further assumption that acquired traits in the parent can not be transmitted to the offspring because the germ plasm from generation to generation is continuous and immortal and therefore unvarying, is shown to be equally without foundation. The great English scientist in his discussion appeals constantly to facts. And it is by an array of incontrovertible facts that the German professor's theories are upset. He shows conclusively that acquired traits *are* transmitted, not only in the human species but also in the animal kingdom generally. The evidence presented on this point by Mr. Spencer would seem to be sufficient to settle finally the vexed question of the transmissibility of acquired traits.

Aside from the interest attaching to the consideration of the problems presented in Dr. Weismann's book, the discussion is extremely interesting as illustrating the different methods by which the ultimate truth is reached through scientific research. Theories are as necessary in scientific investigations as facts. But the observed facts must support the theories. Dr. Weismann insists upon this and, like Mr. Spencer, makes his appeal also to the facts. But when the facts are observed through the false medium of an erroneous theory, the facts themselves become distorted, and it is not every mind that can allow for the aberration. Here is Prof. Weismann's weak point. In his eagerness to sustain his contention, he permits himself to bridge over great gaps in his theories by supplying suppositions. And through these gaps Mr. Spencer comes up with a phalanx of adverse facts which completely demolish the theories.

Prof. Weismann's books on this subject represent, no doubt, the work of a lifetime. His writings bear the impress of great erudition, and of elaborate, painstaking workmanship. Upon the soundness of the biological views advanced and advocated, the author has evidently staked his reputation as a man of science. To see these works rudely assailed and their fundamental doctrines discredited seems pitiless and unkind. But it is thus that science makes advances. No fabric that rests upon false foundations, however famous the architect or imposing the structure, may rest secure from her attacks. And in the onslaught against all forms of erroneous belief, the one trait of judicial mindedness counts for more in the outcome than all the other qualifications besides of the investigator. Here is where Mr. Spencer stands preëminent, and his methods are models for study for any who may have the inclination or the aptitude for scientific investigation. JAMES L. TAYLOR, M.D.

The Pensacola Board of Health.

PENSACOLA, FLA., Aug. 26th, 1893.

To the Editor—Sir:—As requested, the following statement of the reported outbreak of yellow fever in the city of Pensacola, Florida, is made for the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

On August 9th, the attending physician reported that Rev. F. C. Waite and Ellen Wood had died that morning of yellow fever. This report came to the Board of Health without any previous notice of even a suspicion of the existence of yellow fever in the city. Steps were immediately taken to isolate and guard the premises where those deaths had occurred, both of which are in the northern part of the city, and separated about five blocks. An autopsy was held during the afternoon of the same day, and the physicians performing the same, decided that both deaths had been caused by yellow fever.

Upon this, the county health authorities gave notice by wire to the State and the United States health authorities, and also to the Health Boards of adjacent States. Joseph Y. Porter, M.D., State Health Officer of Florida, arrived on the night of the 10th and next morning assumed official charge of the investigation of the decision of the reporting physicians, and the probable origin of the contagion. Under the direction of the State Health Officer, acting through the County Board of Health, a house-to-house inspection was at once begun and vigorously prosecuted, and in the meantime measures were taken to trace every rumored suggestion as to how yellow fever might have reached this city. P. A. Surgeon, G. M. Magruder of the Marine Hospital Service, arrived here on the evening of the 11th, and

Surgeon H. R. Carter of the Marine Hospital Service arrived on the morning of the 12th. These gentlemen entered at once into hearty coöperation with State Health Officer, Dr. Joseph Y. Porter, in carrying out his plan of investigation.

On Monday, Aug. 14th, the following official bulletin was published by the State Health Officer:

OFFICE OF THE STATE HEALTH OFFICER OF FLORIDA.

PENSACOLA, FLA., Aug. 14th, 1893.

To the Public:—The State Health Officer of Florida announces that an investigation in the cause of death of Rev. F. C. Waite and Ellen Wood, who were reported to have died of yellow fever in the city of Pensacola on the 9th day of August, has been thoroughly and impartially made, in which he has been ably assisted by Surgeons H. R. Carter and G. M. Magruder of United States Marine Hospital Service.

These gentlemen agree with the conclusions herein expressed.

These cases were not seen either in life or after death, and therefore the opinions hereinafter noted are based on:

The clinical history of the cases.

The record of antopsies, and the statements of the relatives, nurses and friends of the decedents who were in attendance during their late illness.

There is nothing in the clinical history of the autopsy of the Rev. Waite to justify a diagnosis of yellow fever. On the contrary he seems to have died from acute gastro-enteritis with marked abdominal symptoms.

In the case of the child, Ellen Wood, the opinion is given, that while the record of the case clinically and from the autopsy, does not give a clear history of yellow fever, yet it contained sufficient evidence to justify the statement that the case was "suspicious," and demands precautionary surveillance and disinfection of the dwelling and its contents, together with the premises.

At this present time there have been no other cases of yellow fever nor suspicious cases reported. A house-to-house inspection, which has been made within the last three days and is now completed, discovers no sickness of a suspicious nature among the residents of the city.

[Signed] JOSEPH Y. PORTER,
State Health Officer.

Surgeon R. D. Murray, the distinguished yellow fever expert of the Marine Hospital Service, arrived on the night of the 14th and after a thorough examination of the whole matter, fully concurred in the opinion of the State Health Officer and the concurring surgeons, as expressed in the bulletin of the 14th. And it is proper to add that the statements therein made were in full accord with the opinion of the local health authorities.

As further history of the reported outbreak and investigation, an extract is here quoted from an official announcement by the State Health Officer on Aug. 18th:

OFFICE OF THE STATE HEALTH OFFICER OF FLORIDA.

PENSACOLA, FLA., Aug. 18th, 1893.

To the Public:—The State Health Officer expresses the belief that the fears and apprehensions of the health of Pensacola, which for the past week have agitated the public, involving the interdiction of travel and the consequent embarrassment to commerce, should now cease.

Of the reported deaths on the 9th inst., a thorough and impartial investigation into the history of the cases confirms the opinion heretofore announced that the Rev. Waite did not die from yellow fever, and that the death of the child, Ellen Wood, from the history, was of such a doubtful nature as to only warrant the disinfection of the dwelling as a sanitary measure, which precaution the public was entitled to receive by reason of this element of doubt. This has been done under the direct supervision of the State and United States government officers.

Since this investigation was begun and during the entire progress, the State Health Officer has been cognizant of all diseases and ailments which have existed or occurred in Pensacola, and is able to aver that no cases have occurred of a quarantinable contagious nature. This fact, coupled with the long period of active and retrospective observation, warrants the statement that there are no hidden causes which may produce it.

A notable fact in connection with these cases is that during their occurrence no precautions were taken to prevent any possible infection from them, and free and unrestricted communication was had with each, notwithstanding which, there have been no developments of a suspicious nature among the non-immune so exposed; and further, that the meteorological conditions during that period were peculiarly inducive of yellow fever, had the germs of the disease been introduced in the place.

Under orders from the Department, Surgeon Carter left Pensacola for Brunswick, Ga., on the 14th, but the investigation into the sanitary condition of the city was continued until 6 P. M. on the 19th, and the result is set forth in the following bulletin issued at that date:

THE CITY'S HEALTH.

Now that the yellow fever scare is a thing of the past in Pensacola, those who fled from the city when the alarm was given should be coming home to take part in restoring business to its accustomed channels. A great many have already returned, and those who yet remain away need feel no hesitation in coming back. The city was never more healthy, and the following, which is printed as a part of the history of the scare, should assure every one who has a lingering doubt of the real condition of affairs here:

PENSACOLA, FLA., Aug. 18, 1893.

We, the undersigned representatives of the health departments of the State of Florida, the United States of America and the City of Pensacola, do hereby announce that after a thorough and careful inspection of this city, we have failed to find the existence of any infectious disease whatever.

[Signed] Respectfully, JOSEPH Y. PORTER,
State Health Officer.
R. D. MURRAY,
Surgeon U. S. Marine Hospital Service.
G. M. MAGRUDER,
P. A. Surgeon U. S. Marine Hospital Service.
ROBERT W. HARGIS,
Pres. Escambia County Board of Health.

Very truly yours,
ROBERT W. HARGIS,
Pres. Escambia Board of Health.

Wants Cerebrine.

To the Editor—Dear Sir:—Will you kindly insert the communication herewith transmitted, in your correspondence column, and oblige. Very truly yours,

G. ARCHIE STOCKWELL.

650 Congress street, E. Detroit, Mich.

$5.00 Reward.—The undersigned will pay $5.00 each for a few bottles of cerebrine (Hammond) of the lot issued by the Columbian Chemical Co. in May, 1893. This cerebrine was devoid of sophistication by nitroglycerin, and moreover did not have the label of the Columbian Chemical Co., cross-stamped by fac simile in red of Hammond's signature.

Address DR. ARCHIE STOCKWELL.

650 Congress street, E. Detroit, Mich.

BOOK NOTICES.

A Manual of Diseases of the Ear. By GEORGE P. FIELD, M.R.C.S., Aural Surgeon and Lecturer on Aural Surgery, St. Mary's Hospital, Medical School, London. In one octavo volume of 391 pages, with seventy-three engravings and twenty-one colored plates. Cloth $3.75. Philadelphia: Lea Brothers & Co., 1893.

The American publishers of the fourth edition of Field's work on "Diseases of the Ear" have furnished to American readers an excellent work on otology.

The first thirty-two pages are devoted to the anatomy of the ear illustrated by twenty-seven woodcuts.

Nine pages are devoted to its physiology, with one illustration giving diagrammatic view of the organ of hearing.

Twelve pages, with six illustrations, are devoted to the methods of examination of the ear. The next fourteen chapters deal with diseases of the ear.

Chapter eighteen treats of deaf-mutism, its causes and statistics, as well as methods of instructing deaf mutes. The final chapter is on aids to hearing including ear trumpets, artificial membrane, audiphones and rodosteophones. The three chapters in which diseases of the auricle and external meatus are considered, give a full exposition of the diseases and accidents to that part of the ear, with which the general practitioner of medicine has more especially to deal, and will be of interest to them as well as to otologists.

The next seven chapters are devoted to the membrana tympani and the middle ear where the interest of otologists largely centers, since most of the affections and injuries of these parts are most dangerous to hearing, and not infrequently to the life of the patient.

Chapter fifteen deals with the most difficult part of the hearing apparatus—the internal ear or perceptive apparatus.

Diagnoses of the affections and injuries of the external ear, and their treatment, are well presented by the author. Naturally they are the least difficult of recognition, and the methods of treating them as detailed by the author will interest all physicians who are called upon to treat those diseases or injuries.

The variety of the conditions of the middle ear resulting in impairment of its function, whether from inflammation simple or suppurative, acute or chronic, or from mechanical violence, is well presented by the author. Their diagnosis is facilitated by the manner in which the subject is treated in the text and illustrations.

The therapeutics and surgery of the part will be recognized as presenting the advances made in this subject in the last quarter of a century.

The author's experience coincides with that of others, that of the many devices designed to aid those with impaired hearing, only ear trumpets and conversation tubes have given any great amount of assistance, except in a limited number of instances.

The illustrations of the work are fair, but most of the chromo-lithographs can scarcely be considered more successful than such efforts in the field of surgery usually are, when too often they are only misleading. Figure 53 is given as "method of passing the Eustachian catheter," but it is so evidently a mistake that no one would be likely to be led to believe otherwise.

The work as a whole will be welcomed by the medical public.

MISCELLANY.

Prof. Joseph R Wilson of Philadelphia, recently delivered a lecture in the Mining Building at the World's Fair on "The Detection of the Presence and the Percentage of Explosive Gases in Coal Mines, and how to prevent Explosions and Loss of Life."

The apparatus by which this is accomplished consists of two pumps, one of which takes in pure gas and the other pure air as a basis of measurement. The cylinder is arranged so that any desired percentage of gas in conjunction with air can be produced, while the component parts always equal 100. The product of the two cylinders is pumped into the igniting chamber, which has an aperture in front of a gas jet. Should the mixture be ignitable, ignition will immediately take place and the expansion caused by the heat propels a loose piston head at the end of the chamber against a gong, which is caused to sound.

As can readily be seen, the percentage of explosive gas is accurately obtained.

By means of the comparative turpidity of CO_2, in lime water, this apparatus ascertains the percentage of CO_2 in the exhalation of the breath and thereby determines the condition of the lung tissue. In the treatment of consumptives this discovery is of great benefit to the medical profession, as an opportunity is given to watch the daily progress of the disease.

Emin Pasha (Dr. Schnitzer).—Dr. Junker, the African explorer, recently passed through New York. When asked what he thought of the reports of the death of Emin Pasha, stated that he discredited such reports, and that his belief was that Emin was securely established at or near the Albert Nyanza. The latest report that has come down to the coast from Lake Tanganyika asserts that Emin had been slain and eaten at an Arab station about one hundred miles west of the Albert Lake. An English missionary, named Swann, writing in April last, states that the event fatal to Emin took place in October, 1892. This news comes through several independent, though Arab, sources.

There is nothing hazy about the Surgeon General of Siam.—Dr. T. H. Hayes, a graduate of the Maryland University, and a few years ago a struggling drug clerk, is now, although still a young man, surgeon general of the Siamese army and physician to the household of the king. He is also at the head of large educational institutions, which he has modeled after prominent schools of learning in Baltimore, is in charge of all the hospitals, and, moreover, frequently preaches to the natives and foreign residents, being an accredited minister of the Presbyterian church. He receives from the king a salary of seven thousand dollars a year and perquisites.—*La Salle Tribune.*

Prosecuted on account of a Postal Card.—Dr. James E. Reeves' formerly of Wheeling, now of Chattanooga has been sued for damages on account of the following postal card, written to Dr. Mettner of Cincinnati:

CHATTANOOGA, Aug. 14, 1893.

My Dear Doctor:

I have seen your name in Amick's pamphlet. Please give me the outcome of your experience with the so-called "chemical treatment" for consumption. The enterprising managers have within the last month made Chattanooga a sort of head-center for sending out in the secular press wonderful cures which are pure fabrications. Not a particle of proof can be furnished that a case of tubercular consumption has been cured, or benefited by the so-called treatment. Has Cincinnati sold out and moved to Chattanooga? Verily, it seems so. Speak your mind fully to me.

Sincerely yours, JAMES E. REEVES.

Dr. Reeves is full of fight, and says he will expose the whole thing in court next October with great pleasure.

Board of Health Resign.—Four of six members of the Columbus Georgia Board of Health including the President, Dr. Ticknor, resigned because the city council refused to pass an ordinance of quarantine against Brunswick.

Dr. Frank E. Waxham of Chicago, has been elected to the chair of Laryngology and Clinical Medicine in the Gross Medical College of Denver.

The Protestant Hospital Association of Duluth, Minn., capital $50,000 has been incorporated.

LETTERS RECEIVED.

(**A**) Antikamnia Chemical Co., St. Louis, Mo.; (**C**) Covert, O. F., Cameron, W. Va.; Corr, A. C., Carlinville, Ill.; Conkling, G., Glens Falls, N. Y.; (**D**) Duff, J. M., Pittsburgh, Pa.; Dunlap, W. H., Syracuse, N. Y.; (**E**) Eskridge, J. T., Denver, Colo.; Eagleston, J. B., Seattle, Wash.; (**F**) Fuller's C. H. Adv. Co., Chicago, Ill.; (**G**) Gihon, A. L., Washington, D. C.; (**H**) Heath, W. P., St. Louis, Mo.; Hobbs, J. O., Chicago; Hayes, D. J., Milwaukee (**L**) Luten, S. W., Cayce, Ky.; Larkin & Scheffer, St. Louis, Mo.; (**M**) McFall, D. M., Mattoon, Ill.; Mullen, A. J., Michigan City; Mann, E. L., Elgin, Ill.; McMurtry, L. S., Louisville; (**N**) Noyes, P. J. Mfg. Co., Lancaster, N. H.; (**P**) Postmaster, Berrien Springs, Mich.; (**R**) Rowan, P. J., Chicago; Reeves, Jas. E., Chattanooga, Tenn.; Ruschenberger, W. S. W., Philadelphia; Rogers, H. R., Dunkirk, N. Y.; (**S**) Stout, Joseph, Ottawa, Ill.; Stockwell, G. Archie, Detroit, Mich.; (**T**) Taylor, J. L., Wheelersburgh, O.; (**W**) Waxham, F. E., Denver, Colo.; Wilson, W. J., Detroit.